



An-Najah National University
Faculty of Graduate Studies

**FACTORS INFLUENCING ACCEPTANCE OF
HEALTH INFORMATION SYSTEM AMONG
HEALTH CARE PROVIDERS IN PALESTINE
MEDICAL COMPLEX –RAMALLAH-
PALESTINE**

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**This Thesis is Submitted in Partial Fulfillment of the Requirements for the Degree of
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Dedication

All praises to Allah, as I say good bye to many tireless days and nights of hard work in the most difficult circumstances. To utmost knowledge lighthouse to our greatest and honored prophet Mohammed- Peace be upon him.

To my other soul, who spent many nights raising me into the man I am today to my beloved Mother.

To whom he strives to bless comfort and welfare, to my first inspiration, who supported me and stood beside me always, to my beloved Father.

To my love forever, who support and encourage me to move forward, to my dear wife.

To those who were very proud of me, to the blood that is in my veins, to my brother and the flowers of our house my sisters.

To those who taught me letters of gold, and words of gems, to those who gave me so much, to my teachers.

To the comrades of the path, to those who always supported me, to the shining candles in my life to my friends and my colleagues.

To my country Palestine, To my beloved university, to the spirit of martyrs and prisoners.

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Declaration

I, the undersigned, declare that I submitted the thesis entitled:

**FACTORS INFLUENCING ACCEPTANCE OF HEALTH INFORMATION
SYSTEM AMONG HEALTH CARE PROVIDERS IN PALESTINE MEDICAL
COMPLEX –RAMALLAH-PALESTINE**

I declare that the work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

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Signature:



Date: 7/2/2024

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FACTORS INFLUENCING ACCEPTANCE OF HEALTH INFORMATION SYSTEM AMONG HEALTH CARE PROVIDERS IN PALESTINE MEDICAL COMPLEX–RAMALLAH-PALESTINE

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Abstract

Most of the Palestinian government hospitals have a unified health information system to deal with health care recipients, which is positively reflected on the quality of medical services. To ensure the continuity of providing the best possible care, the factors affecting acceptance to the health information system among health care providers must be studied, as they are the main user of the system, and they have a direct impact on the success of this system and ensure its development. The purpose of the study is to investigate the factors that affecting acceptance to the health information system among health care providers.

A quantitative-based cross-sectional study was conducted among health care providers, attending in Palestine medical complex in Ramallah city between September and October of 2022. A structured Self administered questionnaire was administered on participants who were recruited using the systemic random sampling technique. Linear and Binary logistic regression analysis were conducted using statistical package for the social science version 25.

Technological factors which included into the system quality, in which (62.3%) of the participants found HIS to provide all the functions included in completing the job to be very high, while (49%) found its ability to integrate with other systems' information to be low, as well as its fast response time to be low (31.3%) or medium (54.7%), compared to (74.3%) who found its 24/7 support services to be very high as major factors that influenced them acceptance of health information system. In addition, (37%) of the study participants noticed a low level of HIS features that prevent unauthorized persons from accessing data.

Technological and human factors are the main factors that influence acceptance of health information system among health care providers in Palestine

Keywords: Health information system, Electronic Information system, Acceptance, Palestine

Chapter One

Introduction and Theoretical Background

1.1 introduction of the study

Technological development at the top of the most critical factors influencing social, economic and health systems that require effective management and in-depth strategic study (Handayani et al., 2017). It plays a prominent role when making many policies and decisions (Owusu Kwateng et al., 2019).

Under the umbrella of technological development, providing integrated and best quality health care to the population is one of the most important criteria for judging the health system in all countries (Handayani et al., 2017). Health management is an essential element that maintains stability, cohesion and development of health systems at all levels. Keeping pace with the action in all directions is one of the most important rules that health institutions must set when developing a full general strategic plan (Jahanpour Alipour A, 2021).

Health care at all levels has witnessed remarkable improvement and rapid transformation through health information technologies. This improvement is represented explicitly by (computerized health information systems, electronic health records, and various health devices), which in turn led to fundamental and radical changes in health practices followed by healthcare providers (De Leeuw et al., 2020). Computerized health information systems and electronic health care records were crucial in developing and improving the efficiency and quality of health services provided by various health institutions (Asan et al., 2017). Health information technologies are the main ingredient for establishing integrated, comprehensive and high-quality health systems to meet the different health needs of the population (Alipour et al., 2017). In addition to providing high-quality health care, providing health care at a reasonable cost to individuals was one of the most important challenges facing decision-makers in many countries (Saghafian et al., 2021).

Because of the essential of using technology in the health deciplin, it has become a priority for governments, many international institutions have presented many initiatives to accept the use of this technology, especially in countries that cannot afford the costs of

adopting such modern health systems, where one of these initiatives is the health information system (Kruse, Kothman, et al., 2016).

The health information system is an integrated reference system designed for use by health care providers at all levels in hospitals and health medical centers (De Leeuw et al., 2020).

It is a system designed to facilitate the process of providing health care, documenting and maintaining it when needed and ensuring ease of use and management by health care providers on a daily and continuous basis. This system should help the users by avoiding many problems resulting from the improper management of this vital information and reducing errors in the health care field of all kinds as much as possible (Asan et al., 2017).

Health information systems (HIS), defined by the World Health Organization (WHO) as integrated efforts to ‘collect, process, report and use health information and knowledge to influence policymaking, programmed action and research’, are essential to the effective functioning health systems worldwide (Ismail et al., 2015).

A practical health information system (HIS) is the fundamental guarantee of a coherent and solid health system capable of meeting future challenges by providing an appropriate environment for making the right health decisions based on reliable scientific foundations that are evidenced and capable of accurately identifying emerging health problems and dealing with them in a timely and precise manner (De Leeuw et al., 2020).

Due to multiple encouraging considerations for adopting health information systems in various nations throughout the world, it is impossible to issue health policies that are suited to the reality of the population without prior and accurate knowledge of the community's health and the existing practical facts. The most important of these is the increased interest in individual and population health. In addition to enormous amounts of important data, the presence of such systems at medical institutions is required (Norton et al., 2019).

It adds to the various benefits of implementing a health information system, such as increased worker efficiency, high-performance efficiency, and time and effort savings. However, the primary goal of providing high-quality health care can be assured (Asan et al., 2017).

Electronic health record (EHR) systems are widely used in hospitals worldwide. Hospitals have become almost entirely reliant on health information systems to improve service quality and other administrative aspects, particularly in operational and training operations (Kruse et al., 2015).

Many government hospitals in developing countries are the primary providers of health services at all levels, and as a result, they are vulnerable to over population in addition to increased labor constraints caused by the enormous number of healthcare recipients (Alipour, Mehdipour, & Karimi. 2019).

The Palestinian government benefited from global attempts to implement health information systems with the goal of improving the use of information technology in Palestinian public hospitals, which improved the quality of care offered (Jabareen et al., 2020).

Several studies have reported improvements in the quality of care, access to documentation, billing and reimbursement, and employee satisfaction and retention rates. It has been evidenced in many government hospitals that have adopted health information system technology (Handayani et al., 2017); (Kruse, Kothman, et al., 2016). As well as health care reform is easily possible when health information is managed thoughtfully and reliably, in addition to using the solutions provided by the health information system (Jabareen et al., 2020).

Users (health care providers) accepting of health information systems for such systems, is one of the most important factors that ensure the correct implementation, usage and success of adopting these technologies (Kruse et al., 2015). HIS adoption among health care providers continues to vary among health care systems across countries due to various factors (Alipour, Mehdipour, & Karimi. 2019).

Understanding factors that affect the readiness and willingness of healthcare providers to adopt new information technology is critical for the system, and their ability in clinical decisions is an essential factor influencing the quality of care (Jabareen et al., 2020).

In addition to appropriate infrastructure and operating conditions to establish a coherent health information system, there is a need to evaluate the users of the health information system. To ensure better quality, higher reliability, and thus the provision of the best

possible health care, as well avoidance of many of the negative consequences of misuse (Handayani et al., 2017).

Along with the many beneficiaries of using health information technology and big data and its ability to improve health care, there is a need to know the potential challenges of adopting these technologies, especially from the point of view of its users (health care providers) in an attempt to mitigate these impacts (Ratanawongsa et al., 2018).

The low computer skills of the staff, the poor infrastructure of information and communication technology, in addition to being substandard, the paper systems that are widely prevalent across government hospitals and their various problems are among the most important issues and challenges facing developing countries when trying to adopt the technology of different health information systems (Jabareen et al., 2020).

The most significant challenges to deploying health information systems were nurses' lack of computer skills, the system's complexity, alert fatigue, and opposition due to old methods. This resulted in poor system usability, low acceptance, and distrust (Asan et al., 2017).

The Palestinian Ministry of Health began implementing the health information system (Avicenna) in several hospitals and government facilities in 2010, making Palestine one of the countries making an effort to embrace it in all of its health facilities. All health records are scheduled to be electronic within the next few years. As a result, the purpose of this study is to look at the elements that influence the acceptance of the Avicenna health information system in the Palestine Medical Complex. It can also serve as a guide for policies and practices. (State of Palestine : Humanitarian Situation Report, End of Year 2020 - Occupied Palestinian Territory, 2021).

1.2 Problem statement

Providing high-quality health care is one of the essential requirements that the Palestinian Ministry of Health aims to achieve to improve expected health outcomes.

The use of information technology in various healthcare sectors, especially in hospitals, has great potential to enhance the quality of services provided and the efficiency and effectiveness of employees (Asan et al., 2017).

The Avicenna Health Information System was used in Palestinian governmental hospitals in 2010 at Rafidia Governmental Hospital in Nablus city, first and then it is applied in all Palestinian governmental hospitals (State of Palestine : Humanitarian Situation Report, End of Year 2020 - Occupied Palestinian Territory, 2021).

During this period, some scientific research on the Avicenna health information system was conducted, but it was limited and insufficient. In addition, some other research focused on a particular category of users of healthcare providers without others.

Despite the continuous updating of the Avicenna Health Information System, the development of the system did not rely heavily on scientific research directly related to the factors influencing the acceptance of health care providers to the Avicenna health information system, as there is a real gap in the information related to this topic. Despite its importance in making many health decisions and policies. These will directly impact the quality of health services provided in Palestinian government.

The lack of clear criteria for the main factors (HIS ease of use, HIS usefulness, Human, Organizational and Technological factors and HIS acceptance) that influence acceptance between health care providers and the health information system of Avicenna, has a significant negative impact on the quality of health service provided.

The study outcome could be applied in Palestinian healthcare institutions to increase the future effective implementation of information systems.

1.3 Aim of the study

The study's purpose is to investigate the factors influencing the acceptance of health information systems (Avicenna) in Palestinian healthcare institutions.

1.4 Study objectives

The study mainly investigates the factors (Human, Organizational and Technological) influencing the acceptance of the health information system among healthcare providers in Palestine. Therefore, the following objectives are being fulfilled to achieve the main one:

1. To find out the health information system's perceived usefulness and ease of use among health care providers in Palestine.
2. To explore the Human factors influencing the acceptance of health information system among health care providers in Palestine.
3. To identify the Organizational factors influencing the acceptance of health information system among health care providers in Palestine.
4. To determine the Technological factors influencing the acceptance of the health information system among health care providers in Palestine.
5. To find the overall distribution of HIS acceptance.
6. To assess the relationship at the significance level ($\alpha < 0.05$) between demographic profiles and factors influencing the acceptance of the health information system among healthcare providers in Palestine.
7. To investigate the relationship at the significance level ($\alpha < 0.05$) between factors influencing the acceptance of the health information system among healthcare providers in Palestine.

1.5 Study hypothesis

H₁: There are no statistically significant differences at the significance level ($\alpha < 0.05$) between the perceived influencing factors and the acceptance of the health information system (AVICENNA) among healthcare providers according to their socio-demographic profiles.

H₂: There is no statistically significant relationship at the significance level ($\alpha < 0.05$) between perceived usefulness and ease of use and the acceptance of health information system (AVICENNA) among healthcare providers.

H₃: There is no statistically significant relationship at the significance level ($\alpha < 0.05$) between Human factors and the acceptance of health information system (AVICENNA) among healthcare providers.

H₄: There is no statistically significant relationship at the significance level ($\alpha < 0.05$) between Technological factors and the acceptance of health information system (AVICENNA) among healthcare providers.

H₅: There is no statistically significant relationship at the significance level ($\alpha < 0.05$) between Organizational factors and the acceptance of health information system (AVICENNA) among healthcare providers.

H₆: There is no statistically significant relationship at the significance level ($\alpha < 0.05$) between the acceptance factors and the acceptance of health information system (AVICENNA) among healthcare providers.

1.6 Importance of the study

The counts of hospitals in the Ministry of Health is twenty eight, with a capacity of 3,590 beds, or (54.8%) of the total count of beds in Palestine (State of Palestine : Humanitarian Situation Report, End of Year 2020 - Occupied Palestinian Territory, 2021).

There are fifteen Ministry of health hospitals in the West Bank, with a capacity of 1,760 beds, equal to (49%) of the total hospital beds numbers. In comparison, there are thirteen MOH hospitals in the Gaza Strip, 1,830 beds or (51%) of the full MOH hospital beds numbers in Palestine. The statistical reports of the Palestinian Ministry of Health show the large numbers of beneficiaries of its health services. Therefore, improving the quality of medical services in Palestinian government hospitals has a significant and direct impact on most members of Palestinian society (State of Palestine : Humanitarian Situation Report, End of Year 2020 - Occupied Palestinian Territory, 2021).

So, it is essential for all healthcare providers that use health information systems to be aware of the importance of a high level of acceptance with HIS and the need to evaluate the current situation.

In order to make decisions based on scientific facts aimed at improving the level of the health service provided and addressing the weaknesses level that exist through training programs and targeted courses, knowing the most categories of health care providers that need these courses and intensifying efforts with them and reduce medical errors that can be avoided in many situations resulting from wrong handling and lack of acceptance with the health information system.

1.7 Definition of significant terms as used in the study

1- Health information system: An integrated electronic system that collects, store, retrieve and display overall patients' data and information such as a history of patients' information, results of laboratory test, diagnoses, billing and other related hospital procedures which are used in several departments within hospitals (Ismail et al., 2015). HIS has several components, for example, Clinical, Financial, Laboratory, Nursing, and Pharmacy Information System (PIS), in addition to Picture Archiving Communication System (PACS) and Radiology Information System (RIS) (Ismail et al., 2015).

2-Avicenna's health information system: "An extended electronic health record (EHR) system that includes functionality for medical charts; registration, scheduling, and financial information of patients; laboratory results; prescription information, including ordering, dispensing and tracking medications; systems for maintaining, aggregating and reporting data that used in Palestinian governmental hospitals and facility" (State of Palestine : Humanitarian Situation Report, End of Year 2020 - Occupied Palestinian Territory, 2021).

3-Health care provider: because of wide and multiple definition of health care provider we used in our study those with is directly and continuously uses health information system according to similar study (Handayani et al., 2017). "A person who is trained and licensed to give health care. Also, a place that is licensed to give health care. Doctors, nurses, and hospitals are examples of health care providers" (Ismail et al., 2015).

4-Technology Acceptance: is defined as "opposite to the term rejection, where it signifies the positive decision toward using an innovative solution. its concerned with the psychological status of a person regarding the intention to use a specific technology". (Handayani et al., 2017).

5-Adaptation: "The innovation is developed, installed, and maintained. Procedures are developed and revised, and members are trained in the new procedures and innovation" (Handayani et al., 2017).

1.8 Theoretical Background

This part reviewed literature related to the study based on the following thematic areas: the concept of the HIS, the Influence of, human factors, technology factors and organizational factors on acceptance to health information Systems (AVICENNA). It also focus on different important prolems relating to these factors as well the conclusion of the discussion is given at the end of the chapter.

PUBMED, MEDLINE, Microsoft Academic and Google search engines were utilized for this literature review. Key words used for the search were: health information system, factors influencing, adaptation, acceptance, health information technology and Palestinian health information system. Quantitative or qualitative studies on factors that affects the acceptance of health information system among health care providers in the Occupied Palestinian Territories and other countries were written in our literature review.

The Concept of the HIS

For healthcare practitioners, information may be both a benefit and a difficulty. The applying of information technology system in healthcare services has aided healthcare practitioners in patient care and treatment. Some of the advantages of an Electronic Medical Record (EMR) system include improving all areas affects patient care and encouraging healthy lifestyles across all of communities, boosting efficiency, lowering healthcare costs, and improving clinical decision-making. Despite the obstacles that the developing world has with electronic medical records, such as interoperability, privacy and confidentiality, legislative and societal impediments, technological constraints, electronic preservation, the legal status of electronic medical data, and customization (Hossain Shahriar et al., 2023).

Healthcare providers' limited acceptance to HIS is a considerable warning to its successful implementation (Jabareen et al., 2020).

Most industrialized nations' governments have invested, and continue to invest resources in healthcare to establish advanced e-health systems that are viewed as one of the top effective means of producing high quality healthcare services to their citizens. The Federal Ministry of Health has produced e-health cards for local insurance-covered patients in Germany. The United States has committed \$1.2 billion to enable county

hospital electronic health records (EHR) usage. In Canada, the federal government developed the Canada Health Inforay, wholly owned and funded by the government and overseen by the deputy minister of health (Gue et al., 2021).

The allocation and the use of resources, access to healthcare services, and effective management of patient encounters in public health facilities are among the most critical challenges facing government healthcare sectors in developing countries. Based on many studies, health information systems supported by information technology can help overcome these challenges (Kose et al., 2020).

Across two South African hospital settings, the effect of a hospital based information system installation on service delivery, user acceptance, and institutional culture, there were substantial differences in views between two hospital groups and the three sample groups of physicians, nurses, and administrators (Ratanawongsa et al., 2018).

Human barriers, which are related to healthcare professionals and their beliefs, as well as financial barriers, which are related to money and funding, are the most significant barriers and constraints that impede the successful implementation of health information systems and electronic medical records (EMR) in Middle Eastern hospitals. These are the two fundamental obstacles and hurdles to effective EMR adoption, and human aspects are even more significant (Al-Marroof et al., 2021).

Plantier et al. (2017) suggested that EHR adoption lever the quality of acute care management in hospitals throughout France because HER impacts the quality of the patient record, the delay in sending information at hospital discharge, the pain status evaluation, and the nutritional status evaluation.

Kose et al. (2020) pointed out that (63.1 %) of all hospitals in Turkey have at least basic EHR features, and (36 %) have full EHR functions by investigating the association between acceptance and utilization and hospital size. Thus, data imply that smaller hospitals are more likely than bigger hospitals to embrace most EHR features.

De Leeuw et al. (2020) defined categories as (1) digital working experience, (2) perception and meaning, (3) hurdles, (4) facilitators, and (5) future views. When researchers at the Dutch University Medical Center identified the Factors Influencing the Adoption of Health Information Technology among Nurses, they discovered that

technologically trailing nurses frequently had insufficient and inefficient digital education. There was a widespread lack of digital awareness and no fundamental digital training or education.

According to Shen et al. (2020) the adoption of advanced health information technology (HIT) capabilities is limited and varied among healthcare systems in the United States. The extent to which EHR systems are standardized is the biggest predictor of advanced HIT adoption in a health system. The second is that hospital and medical group ownership and management are also key predictors of advanced HIT adoption. The third finding is that system resource allocation procedures are less important predictors of advanced HIT adoption when other organizational variables are controlled for.

Farokhzadian et al. (2020) contend that through their study on the factors affecting the adoption and integration of data technology in the health system from the point of view of nurses employed in health care hospitals affiliated with Kerman University in Iran. It was found that providing communication programmes in a technological areas, enhancing documentation, administration and control training, providing resource and performance management and policy-making, enhancing organizational and professional growth paths and other factors contribute significantly to modifying the quality & efficiency of services and medical health care.

According to Rouleau et al. (2017) nurses' adopt of information technology (IT) may alter their practice, change the methods they plan, provide, document, and review clinical care, and finally improve the quality of care provided and patient outcomes.

Ifinedo (2016) added that IT implementation enhances the quality of patient care and raises standards in healthcare institutions by assisting physicians in deciding clinical choices more effectively.

The use of information technology by healthcare workers helped the progression of system evolution, better EHR models, & motivated applicers to add beneficial capabilities to the system. Also, IT enhance providers' performance by reducing late care provided during shift change and maintaining consistency of care (Ratanawongsa et al., 2018).

Asan et al. (2017) observed that IT has expanded reaching to resources and educational information programmes at any time and location, reduced time and money, and created

more possibilities to study in diverse ways, enhance improving the quality of education and nursing training standards.

De Leeuw et al. (2020) in a Dutch university medical institution, highlighted personal traits that influenced the development of digital skills and competencies through participants' discussions. Participants say that it difficult to approach their other health workers for assistance because they did not want to consume their colleagues' time or were embarrassed to do so, the unavailability of digital assistance at home, content that was not rely on the everyday work routine, and inadequate of general information over the digital system or application for which the trainees were being taught.

Jabareen et al. (2020) claimed in a survey performed among personnel in whole health professions at hospitals in both Jordan and Palestine required to examine their usage of the health information system and skills, they found that health practitioners in Palestine and Jordan require HI training.

According to Hosein et al. (2019) among the aspects that influenced the use of the Hospital Information System, training has a positive & good effect on nurses' perception of the simplicity in use and usefulness of HIS implementation between nurses from Lorestan University of Medical Sciences affiliated training hospitals.

While Owusu Kwateng et al. (2019) reported that the key elements users evaluate to impact their behavioral start to adopt & use health information systems are Performance Expectancy, Habit, and Hedonic Motivation. Stakeholders ought to examine system quality problems example of response speed and system design since these serve as motivators for health information system adoption and use.

Kruse, Kristof, et al. (2016) in a systematic literature review of 27 searches done to understand better the constrains that have prevent certain healthcare intitutions from adopting even a basic electronic health record system in the United States, 39 constrains were identified to EHR adoption. The most often mentioned constrains to EHR adoption were cost, technical concerns, technical support, and resistance to change. The initial cost of adopting an EHR is a common barrier, and other often reported others include technical support, technological problems, and continuous expenditures.

Kose et al. (2020) conducted another systematic evaluation of 31 included research to establish a new and complete list of enablers and impediments to EHR adoption in the United States. The literature found 25 adoption enablers: efficiency, hospital size and quality, availability of data, perceived value, and ease of transmitting the information. The literature found 23 hurdles to adoption, the bulk of which were the expense, time demanding impression of uselessness, data transition, facility location, & implementation challenges.

Garavand et al. (2016) in a systemic review of 25 included studies, found that Easy to use, usefulness, social effects, facilitating conditions, attitudes and behavior of users are effective in the use of health information technologies, which are the most important aspects affecting the adoption of health.

Han et al. (2020) conducted a systemic review of 35 included studies. They found that the most factors that affect a healthcare organization's adoption and deployment of health information systems were Complexity, Compatibility, Trainability, Organizational culture, & Organizational scale. Top management support, Organizational readiness, External pressure, external support and Network externality.

Influence of human factors on acceptance to health information Systems Human factors are one of the basic issues that guarantee success acceptance of implementation and change management of health information technology (Handayani et al., 2017). Human factors and human-centered design are crucial in ensuring that health IT is well-designed and compatible with clinical and patient processes. It is described as the amount of trust generated by users' interactions with the HIS (Garavand et al., 2016). Human factors contains of compatibility, information security expectancy, self-capability, and social impact (Alipour, Mehdipour, & Karimi. 2019).

Human factors must be treated seriously and incorporated into the health IT design and implementation (Gagnon et al., 2010).

The influence of human aspects, methodologies and standers on technology in healthcare practice should be evaluated (Alipour, Mehdipour, & Karimi. 2019). Health IT usability issues encountered by physicians, nurses, and other healthcare workers can result in various bad patient outcomes (Garavand et al., 2016).

Hospitals may increase HIS adoption by offering ease-of-use features such as system accessibility to facility assistance, HIS manuals, training socializing skills relevant to HIS usage. Furthermore, managerial support is crucial to the long-term viability of HIS installation (Handayani et al., 2017).

Compatibility

Compatibility (COM) is described as a rank of perception that conforms with ongoing socio-cultural values and beliefs, previous and future experiences, and possible adopters' needs. It is the limit which the system agree or is compatible with how the user prefers to operate (Handayani et al., 2017). Ensuring the system's interoperability with current work practices is essential to acceptance to the health information system (Ifinedo, 2016).

Compatibility is a significant aspect that affects on the readiness to acceptance of novel technologies. In order of importance, top management support, compatibility, and information quality were the most significant factors in nurses' assessed HIS utility. If HIS application is compatible with the values and standards of the users, it will be welcomed, and adoption will be easier. Compatibility is a significant and influential human-related aspect that has influenced the acceptance of a health information system (Saghafian et al., 2021).

Compatibility with work processes, duties, or practice was also a significant adoption element, frequently acting as a barrier rather than a facilitator. Various factors might cause a lack of compatibility (Jahanpour Alipour A, 2021).

The system must be developed with current work practices in mind since low compatibility is likely to result in low levels of utilization, emotions of dissatisfaction, and perhaps aggressive opposition (Ifinedo, 2016). If healthcare workers sense the inconsistency between the tasks and the new technology, they may find it challenging to use, and worthless, such adjustments and developments in information systems would increase overall user satisfaction with health and general information systems (Jabareen et al., 2020).

Information security expectancy

The extent to which a person feels the HIS able to handle information appropriately when secret data cannot be read, stored, or altered by unauthorized parties is characterized as an information security expectation (Handayani et al., 2017).

keeping the consistency, correctness, and trust worthiness of information across its whole lifespan is what integrity requires. Information must not be modified in transit, and precautions must be taken to prevent unauthorized parties from accessing data (for example, in a breach of confidentiality) (Handayani et al., 2017).

Kruse, Kothman, et al. (2016) in a systemic review of 31 included studies conducted about a current and comprehensive list of factors to adopt the EHR. Access to patient data, capability to transfer information and Security were mentioned in the study as some of the main facilitators to adapt to EHR. Kose et al. (2020) have conducted a systemic review of 27 included studies to understand better the challenges that have deterred specific healthcare facilities from adopting at least a basic electronic health record system and found that Privacy Concerns were mentioned as fundamental barriers.

Self-efficacy

Self-efficacy is the level to which people think that the more they understand & know about computers (Handayani et al., 2017). Alipour, Mehdipour, & Karimi. (2019) declared that the level to which users of an information system believe they can fulfil work duties utilizing the system is called self-efficacy and the same authors found that self-efficacy was one of the main significant factors affecting users' (health care providers) perceived ease of use of HIS.

Han et al. (2020) conducted a systemic review of 35 included researches found that Organizational readiness, Organizational scale, and Staff training are on the main aspects affecting the Adoption of Health Information Standards in Health Care facilities.

Social influence

The amount a user believes that other significant individuals feel they should utilize the new technology is called social influence. In other words, social influence affects how much other key people's ideas influence the user's use of the hospital information system, and it is one of the main significant factors that affects users' perceived HIS ease of use (Alipour, Mehdipour, & Karimi. 2019).

Previously, Handayani et al. (2017) noted that social influence substantially impacts individuals' intentions when adopting new technology.

Kruse, Kothman, et al. (2016) in a systemic review of 31 included studies conducted to compile a ongoing & comprehensive list of main facilitators that reach adopting the EHR. Communication and the need for organizational cultural change were mentioned in the literature as some of the main factors in adapting to HER.

Kruse, Kristof, et al. (2016) in a systemic review of 27 studies conducted to understand better the obstacles that have prevent certain healthcare inastitutions from adopting at least one of basic electronic health record system. An organizational cultural change and Degree of Integration were reported as barriers to acceptance to EHR.

Influence of technology factors on acceptanceto health information Systems

A wide range of highly specific healthcare duties & services are supported by information technology. And so, it is critical to search the main elements influencing healthcare professionals' acceptance of this technology (Sebetci, 2018).

Technological qualities encompass aspects of the HIS's capability. Evaluation and measurement techniques are essential to enhance HIS quality and information quality to promote customer happiness and user acceptability. Technological factors included system and information quality variables, which were related to HIS capabilities (Alipour, Mehdipour, & Karimi. 2019).

Kruse, Kristof, et al. (2016) in a systemic review of 27 studies conducted to understand better the challenges that have stopped certain healthcare inistitutions from adopting at least a basic electronic health record system. Technical Concerns, Technical Support and Infrastructure, were reported as barriers to the acceptance to HER. In contrast to these

findings Villalba-Mora et al. (2015) studied the degree of use of Health Information Technologies (HIT) services and the aspects that impact this both specialized & primary care physicians in Andalusia, Spain. Technical difficulties do not appear to impede the implementation of Health Information Technologies.

Influence of organizational factors on acceptance to health information Systems

Hospital managers, ought to provide supportive conditions such as comprehensive and obvious instructions for utilizing the HIS and specialized units or employees responsible for administering the HIS and its connected resources (Saghafian et al., 2021). Managerial support is crucial to the long-term viability of HIS installation (Kose et al., 2020).

Ismail et al. (2015) demonstrated that supportive conditions improve user acceptability of the HIS by increasing perceived utility and simplicity during usage. These enabling circumstances include adopter manual with detailed directions on ways of using an application, specialized components or persons to administer the HIS & sufficient supporting resources.

According to Jabareen et al., (2020) user engagement in HIS deployment can boost customer happiness & acceptability while influencing the perceived utility and simplicity of the HIS.

Table 1 (Appendix B) summarizes some of the previous studies on factors influencing the acceptance and adoption of health information systems.

Chapter Two

Materials and Methods

2.1 Study design

The study is quantitative cross-sectional design. A descriptive survey has specified study objectives, which permits data gathering to be relevant and sufficient to the study topic.

The quantitative cross-sectional approach is appropriate for studies that characterize and illustrate features of an event, scenario, or group of individuals, community, or population as they exist (Handayani et al., 2017). This approach was appropriate since there was a requirement to define responders in terms of factors influencing health information system (AVICENNA) acceptance by health care professionals at the Palestine medical complex.

2.2 Study population

The study population includes all healthcare providers who work at the Palestine medical complex in Ramallah city, which consists of four governmental hospitals (Ramallah sons, Al-Kuwaiti, Al-sheikh Zayed and Al-Bahraini).

2.3 Study sample

According to data from MOH, the number of healthcare providers works at the palestine medical complex was estimated to be 900 workers. The study sample included must meet the following criteria (Data collection start on 10th October for 15-day and ends on 25thOctober .2022):

- They were hired before May 2022.
- Works at the palestine medical complex and registered as a health care provider in the Palestinian ministry of health care.
- Consent to participate in the study.

The raosoft formula was utilized to calculate the sample size with a (95%) confidence value ($z= 1.96$), response distribution ($r = 0.5$), a margin of error ($d= 0.050$), and population size ($N= 900$) The population size was based on the newly documented number of healthcare providers in the palestine medical complex and officially Certified by the Palestinian ministry of health . A total sample size of 274 participants was

determined, and using a (10%) attrition rate, an estimated 300 healthcare providers were recruited to participate in the search. A systemic random sampling technique was conducted on the Palestine medical complex in Palestine.

A list of healthcare providers was obtained from Personnel Affairs in the Palestine medical complex a month before the data collection procedure began. The sample was randomly selected by using random sampling technique. The chosen participants who met the inclusion criteria were contacted by phone, and initial verbal consent was obtained to participate in the research.

The names of 900 healthcare providers mentioned in the list were taken and recorded and turned into numbers from 1 to 900. K^{th} was calculated according to the formula (all study population \ sample size), it was $(900 \setminus 300) = 3$.

The numbers that were given to participants were distributed randomly. Then a random number which was 609, was the first participant. After that, every 3rd number was taken until all samples had been completed (300 participants).

2.4 Instruments of study and validation indicators

This study was based mainly on Technology Acceptance Model Theory, Which have been modified to be compatible with the conditions and requirements of the study.

The acceptability of different kinds of information technologies & applications in the healthcare industry has been studied over years. Internet-based health websites, mobile applications, telemedicine technologies, electronic health records, and health information systems are examples of these technologies. Healthcare technologies were investigated using various technology acceptance models (AlQudah et al., 2021).

Many theoretical models and extensions have been developed over the last decades to explain the degrees of acceptability and users behaviors toward various technologies in various fields (Al-Marouf et al., 2021).

These models presented several aspects in order to comprehend their impact on consumer adoption of technology, among these theories are the theory of reasoned action (TRA), the technology acceptance model (TAM), TAM extensions, and the allined theory of acceptance & the use of technology (UTAUT), one of the theories and models described,

the TAM is recognized as the most important and frequently utilized model in technology acceptance searches in the healthcare area (Kalesamy, 2021).

Acceptance of technology by users is essential at all time, not just during the design operations or immediately after adoption. Changes will take a place on a continuous basis in information systems, their designs, working environments, and possible consumers. Because of these changes, as well as other social or cultural challenges, users' demands may affected (AlQudah et al., 2021).

Technology Acceptance Model has been developed by Davis (1989) is one of the main popular research models predicts use & acceptance of information systems & technology by individual users. Venkatesh and Davis (2000) proposed a new version of TAM called TAM2 which added current variables to the used model (AlQudah et al., 2021).

A self admistred questionnaire was designed by (Handayani et al., 2017)(Appendix A). For the evaluation of hospital information systems acceptance among healthcare providers, minor modifications were made to fit with the standards of Palestine Medical Complex (Appendix C) then it was prepared electronically on a personal iPad - it can be found through the following link : <https://forms.gle/xex8UzJQNzanQNaZ8> .

The structured questionnaire (Appendix A) consisted of 46 questions ,two sections as follows:

1. The first section describes the participants' demographic data, including sex, age, job title, work experience at PMC, and educational level.
2. The second part of the questionnaire consist of 41 questions for evaluating HIS acceptance by users based on six dimensions. The dimensions were; perceived usefulness (n=4), ease of use (n=4), human factors (including four variables of compatibility (n=3), information security (n=4), self-efficacy (n=3), and social influence (n=3), technological factors (including twovariables of information quality (n=4) and system quality (n=4), organizational factors (including threvariables of top management support (n=4), participation of end-users in the HIS implementation process (n=4) and HIS acceptance (n=4).

For each question from the second part of the questionnaire, a five-point Likert scale (from 1 - very low to 5 - very high) was used to rate each sub-factor. Descriptive (mean \pm standard deviation) and analytic (ANOVA, Linear, and Binary logistic regression) statistics were applied to analyze the data using the Statistical Package for Social Sciences (SPSS) software. The mean score of the dimensions was used to determine the users' desirability level of HIS acceptance. A mean score of ≥ 3.75 , 3-3.75, 1.5-3, and < 1.5 out of 5 was considered desirable, relatively desirable, relative failure, and undesirable HIS acceptance, respectively.

2.5 Validity and reliability of the questionnaire

The validity of the study tool (Questionnaire) was examined by content validity and internal consistency validity. A group of four multi disciplinary experts judged the content validity, the questionnaire has been modified based on their feedback and suggestions.

A pilot study was conducted on (10%) (30 partecpant) of the sample size of the Palestine medical complex, and it was excluded from the study. This action was to determine the clarity of the questionnaire, explore the appropriateness of the study instruments, the clarity of meanings and scales, and the time taken to fill the questionnaire. In addition to expecting the response rate. A final modified version was prepared as shown in the (Appendix C).

Pearson correlation matrix to indicate the relation between domains of the second part of the questionnaire has been done and shown a statistically significant relationship. Therefore, it is possible to judge the validity of the domains with statistical significance, thus reassuring its application.

The internal consistency test was applied to examine the reliability of the questionnaire by calculating the reliability coefficient (Cronbach's alpha). The reliability coefficient was calculated to be (86.0%), which is considered an acceptable degree of reliability according to (the Guidelines for developing, translating, and validating a questionnaire in preoperative and pain medicine 2021). To test questionnaire validity, a double translation was conducted. The questionnaire was initially designed in English and then translated

into Arabic by two field experts. After that, it was back-translated into English to ensure that the questions carried the same meaning in both languages.

To eliminate bias, only one of the trained field worker was interviewed to maximize the interview process's validity. Content validity and Cronbach's alpha reliability measure were determined to ensure consistency and accuracy of the questionnaire value, which was more than (0.70).

2.6 Research conceptual model and variables

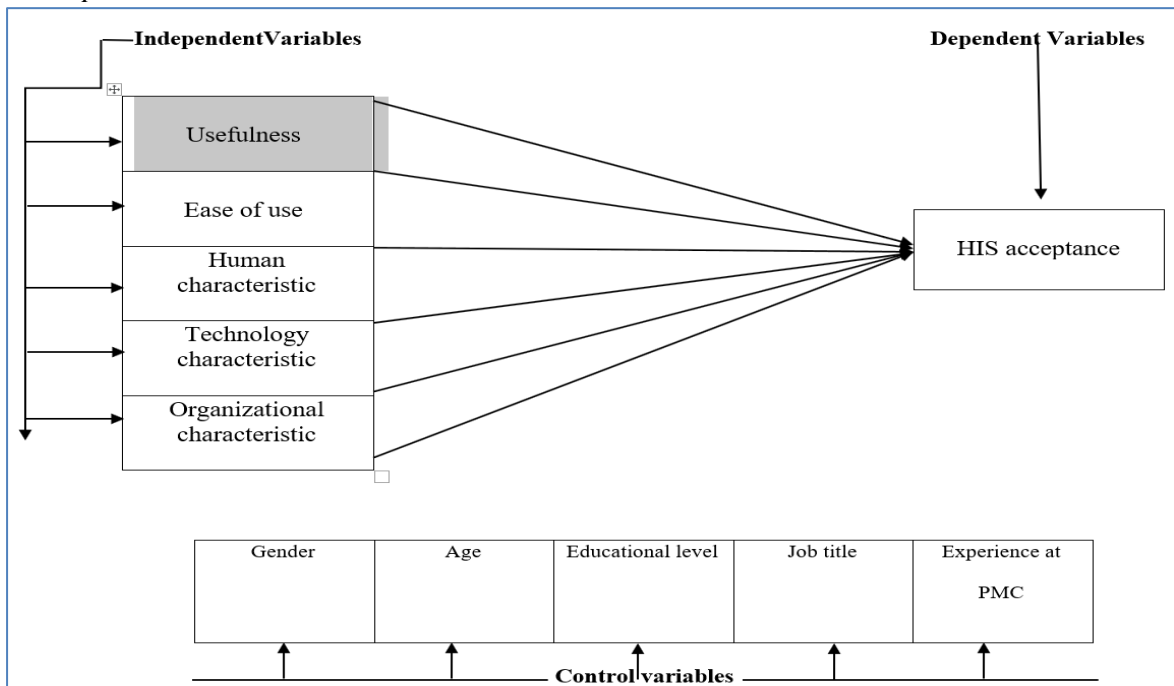
Following a literature review, the conceptual model shown in Figure 1 was applied to investigate the relationships between perceived variables.

Conceptual Framework

The variables in this study are shown in figure 1.

Figure 1

Conceptual Framework



2.7 Study procedures

The following steps were followed:

- Initially, a research proposal for the current study was prepared, and the study tool (questionnaire) was presented to the experts and a group of arbitrators, then submitted on 16 June 2022.
- Official approvals were obtained from the Faculty of Graduate Studies and IRB at A-Najah National University and official authorities to facilitate carrying out the field study by distributing questionnaires to collect data between 20 August 2022 and 30 October 2022; see appendices (D and E).
- A review of previous studies and theoretical frameworks in the field of research to build the theoretical framework for the current study has been issued.
- A pilot study conducted on 20 September 2022 to ensure the validity and reliability of the study tool.
- The study tool was applied to the study sample, and the data were collected, analyzed, and converted into information through special tables between (10th October for 15-day and ends on 25th October 2022).
- Finally, Interpreting, discussing results , formulating recommendations, proposals, and conclusions.

2.8 Data statistical procedure

All data were checked, coded, entered into a database, and statistical data analysis was conducted using IBM Statistical Package for Social Sciences (SPSS) version 25.0 on Windows Operating System to generate descriptive and analytical results. The internal consistency of the items in the multi-factor leadership & job satisfaction scales was measured using Cronbach's alpha. The data were examined for normality of distribution by using absolute skewness and kurtosis. The data were normally distributed when the absolute kurtosis was between -7 to +7, and absolute skewness was between 2 and +2.

Descriptive results included frequencies and percentages of the participants' categorical demographic data and their responses to all scales and subscales of the tool, as well as the means and standard deviations (SD) of the tool's subscales and overall scale scores. As the scales were ranked on a 5-point Likert scale, the scale means (as a scale-dependent

variable) is out of 5. Also, variable values of zero frequency were discarded to ensure the statistical test was correctly performed.

Moreover, analytical results were conducted using suitable inferential tests to test the study's hypotheses. For the relationship between categorical demographic factors and the scales, an independent sample t-test was used to investigate the difference in scales' mean scores according to the dichotomous demographic factors. In contrast, one-way analysis of variance (ANOVA) was used to investigate the difference in scales' mean scores according to non-dichotomous demographic factors.

Moreover, to control for confounding variables, binary logistic regression was conducted. Also, the Pearson correlation test was used to investigate the correlation between all subscales, giving two results: the Pearson correlation test indicates the correlation's direction and strength, and the p-value indicates the significance of this correlation.

2.9 Ethical Consideration

To conduct the current study within research ethics, official approvals were obtained from the Faculty of Graduate Studies and IRB at A-Najah National University and official authorities (Appendix D) and then from the department of Scientific Research in the Ministry of Health (Appendix E).

Verbal informed consent was obtained prior to data collection (Appendix C). Consent forms, including information on objectives & goals, were delivered to all participants in Arabic to ensure fully understood what their participation required. They were informed that participation would be voluntary. Furthermore, the confidentiality and anonymity of the participants were guaranteed. They were also informed of the possibility of their withdrawal from the study at any time without any punishment. Moreover, data security was ensured and only used for research purposes, and the questionnaires were coded by serial numbers and kept in a locked cabinet.

Chapter Three

Results

This chapter consist of data analysis, presentation & interpretation of the data on the study. It focused on response degree and the factors influencing the acceptance of information systems in healthcare services, organization according to research questions.

3.1 Questionnaire Response Rate

Out of the 300 questionnaires distributed, 300 were correctly fulfilled and returned, representing a response rate of (100 %).

3.2 Demographic data of the respondents

This section focuses on the demographic profile (gender, Age category, educational level, job title and Experience years) of participants in Palestine Medical Complex (PMC).

Among 300 participants, (59.3%) were male, (90%) were aged between 20-39 years, most of the study participants completed bachelor's degrees (83.3%), and (51%) were nurses. Almost of the study participants (43%) have an experience of 1-5 years in PMC. Table 3.2 summarize the demographical factors of participants.

Table 3.2*Demographical characteristic of the study participants*

Variable	Values	Frequency	Percentage
Gender	Male	178	59.3%
	Female	122	40.7%
Age category	20 - 29 years old	159	53.0%
	30 - 39 years old	111	37.0%
	40 - 49 years old	26	8.7%
	50 years and older	4	1.3%
	Diploma degree	25	8.3%
Educational level	Bachelor's degree	250	83.3%
	Master's degree	25	8.3%
	PhD degree	0	0.0%
Job title	Nurse	153	51.0%
	Midwife	12	4.0%
	Doctor	72	24.0%
	Pharmacist	9	3.0%
	Laboratory technician	12	4.0%
	Manager	19	6.3%
	Physiotherapist	6	2.0%
	Radiology technician	17	5.7%
	Less than 1 year	0	0.0%
	1 - 5 years	129	43.0%
Experience years in Palestine Medical Complex (PMC)	6 - 10 years	112	37.3%
	11 - 15 years	52	17.3%
	16 years or more	7	2.3%

3.3 Health Information System (HIS) acceptance by users

3.3.1 Perceived usefulness

Table 3.3 summarize the distribution of users' responses to HIS perceived usefulness and ease to use. Among participants, (64.7%) perceived HIS role in enhancing their job as very high, while (61.7%) perceived its usefulness as high. Also, (62.3%) perceived its role in improving job performance as very high, while (66.3%) perceived its importance in productivity as very high.

3.3.2 Perceived ease of use

Among participants, (54%) indicated that HIS ease to use was very high, and the majority of the study participants (61.7%) answered that it was easy to get the HIS to do what they wanted as very high. Whereas, (57.3%) of the study participants perceived their ability to

become skilfull in using HIS very high. while, (48.7%) of the study participants perceived the ease of learning to operate a health information system as high.

Table 3.3

Users' responses to HIS perceived usefulness and ease of use

Statement	1*		2*		3*		4*		5*	
	F	%	F	%	F	%	F	%	F	%
1- Perceived usefulness										
1. Using HIS would enhance my effectiveness in my job.	0	0.0%	0	0.0%	18	6.0%	88	29.3%	194	64.7%
2. I would find HIS useful in my job.	0	0.0%	0	0.0%	24	8.0%	91	30.3%	185	61.7%
3. Using HIS would improve my performance in my job.	0	0.0%	0	0.0%	20	6.7%	93	31.0%	187	62.3%
4. Using HIS at work would improve my productivity	0	0.0%	12	4.0%	15	5.0%	74	24.7%	199	66.3%
2- Perceived ease of use										
5. I would find the HIS easy to use.	0	0.0%	0	0.0%	23	7.7%	115	38.3%	162	54.0%
6. I would find it easy to get the HIS to do what I want it to do.	0	0.0%	0	0.0%	7	2.3%	108	36.0%	185	61.7%
7. It would be easy for me to become skilful in using the HIS.	0	0.0%	0	0.0%	2	0.7%	126	42.0%	172	57.3%
8. Learning to operate the HIS would be easy for me.	0	0.0%	0	0.0%	39	13.0%	146	48.7%	115	38.3%

(1* = Very low, 2* = Low, 3* = Medium, 4* = High, 5* = Very high)

3.4 Human factors affecting HIS acceptance

This part presented human factors affecting HIS acceptance (Compatibility, Information security, Self-efficacy, and Social influence). Participants' responses related to HIS compatibility had a relatively high trend, where (63.7%) of them highly perceived that HIS did not change how they work. In comparison, (51.7%) mentioned that health information system usage does not affects preferences of their practice at work, and (47%) stated that applications could be adopted in accordance with the requierments of the provision of services they delivare is high.

Concerning data security, one of the most essential factors that impact on HIS, responses were shifted to medium response, where (39%) of them perceived medium and low importance to confidentiality, consistency and data validity. In comparison, (37%) perceived a low level of HIS features preventing unauthorised data access. (55.3%) perceived a medium level for the features that prevent or reduce medical errors, compared to (43%) with a medium level for the prevention of unauthorized people's codification for data to remain valid and consistent. Participants were also asked to respond to statements related to HIS self-efficacy, where (43.3%) of them perceived their ability to finish their work using HIS even if they did not use a system like it at a medium level, compared to (46.3%) for a high level regarding their ability to finish the job if they have used similar systems, and (47%) who perceived a medium level of the efficacy of the training they received in the use of HIS.

Lastly, human factors regarding the use of HIS included statements about social impacts, where persons who are necessary to the participants highly (38.3%) suggested to them the use of HIS, while 41% of them perceived the influence of their co-workers to use HIS as a medium, while the people who influenced their thought to use HIS had high (56%) and very high (28.7%) influence. Table 3.4 show the participants' responses regarding the human factors related to the use of HIS.

Table 3.4*Distribution of users' responses to HIS human factors*

Statement	1*		2*		3*		4*		5*	
	F	%	F	%	F	%	F	%	F	%
Compatibility										
1-HIS usage doesn't change (according to) the way I work.	0	0.0%	0	0.0%	0	0.0%	191	63.7%	109	36.3%
2-HIS usage does not change (as appropriate) preferences of my practice.	0	0.0%	0	0.0%	0	0.0%	155	51.7%	145	48.3%
3-Applications can be used in accordance with the needs of the provision of services I provide.	0	0.0%	0	0.0%	43	14.3%	141	47.0%	116	38.7%
Information security										
1-Confidentiality, availability, and data consistency or validity are important features of the HIS.	0	0.0%	117	39.0%	117	39.0%	66	22.0%	0	0.0%
2-HIS provides features that prevent unauthorised people from accessing HIS data.	79	26.3%	111	37.0%	110	36.7%	0	0.0%	0	0.0%
3-HIS provides features that can prevent or reduce user errors to prevent medical errors.	0	0.0%	104	34.7%	166	55.3%	30	10.0%	0	0.0%
4-HIS provides features that can prevent unauthorized codification by an unauthorized person to protect the data in order to remain consistent or valid.	0	0.0%	100	33.3%	129	43.0%	71	23.7%	0	0.0%
Self-efficacy										
1-I can finish my work with HIS even though I have never used a system like this.	0	0.0%	0	0.0%	130	43.3%	114	38.0%	56	18.7%
2-I can finish the job by using HIS if I have been using a similar system to do the same job.	0	0.0%	1	0.3%	63	21.0%	139	46.3%	97	32.3%
3-I realised the training results related to information technology or HIS, so I can use the HIS.	0	0.0%	0	0.0%	141	47.0%	159	53.0%	0	0.0%
Social influence										
1-People who are important to me suggest using the HIS.	0	0.0%	39	13.0%	97	32.3%	115	38.3%	49	16.3%
2-I use HIS because my co-workers also use HIS.	0	0.0%	111	37.0%	123	41.0%	66	22.0%	0	0.0%
3-People who influenced my behavior thought that I should use HIS.	0	0.0%	1	0.3%	45	15.0%	168	56.0%	86	28.7%

(1* = Very low, 2* = Low, 3* = Medium, 4* = High, 5* = Very high)

3.5 Technological factors affecting HIS acceptance

The second type of factor affects participants' acceptance to HIS was the technological factor. First, (43.7%) and (47%) of the participants rated the information output's clearance and ease as high and very high, respectively. In comparison, (53.7%) of them found HIS to provide correct and consistent information at a high level, compared to (59.7%) of a very high rating of HIS information ability to meet their work needs, as well as, (66.3%) who rated HIS information output ease to understand as very high. Also, technological factors included the system quality, in which (62.3%) of the participants found HIS to provide all the functions included in completing the work to be very high. (49%) of participants found its ability to be linked to or integrate with other systems to be low, as well as its fast response time to be low (31.3%) or medium (54.7%), while (74.3%) who found its 24/7 provide service to be very high. Table 3.5 shows the participants' responses regarding the technological factors related to the use of HIS.

Table 3.5

Distribution of users' responses to HIS technological factors

Statement	1*		2*		3*		4*		5*	
	F	%	F	%	F	%	F	%	F	%
Information quality										
1-The information output released by HIS is clear and easy to read.	0	0.0%	0	0.0%	28	9.3%	131	43.7%	141	47.0%
2-The HIS can provide correct and consistent information.	0	0.0%	0	0.0%	16	5.3%	161	53.7%	123	41.0%
3-The information covered in the HIS meets my work needs.	0	0.0%	0	0.0%	18	6.0%	103	34.3%	179	59.7%
4-HIS provides output in a format that is easy to understand.	0	0.0%	0	0.0%	12	4.0%	89	29.7%	199	66.3%
System quality										
1-HIS provides all the functions involved in completing my work.	0	0.0%	0	0.0%	4	1.3%	109	36.3%	187	62.3%
2-The HIS can be linked to or integrated with information from other systems.	51	17.0%	147	49.0%	102	34.0%	0	0.0%	0	0.0%
3-HIS has a fast response time.	20	6.7%	94	31.3%	164	54.7%	22	7.3%	0	0.0%
4-HIS provides services 24/7 or whenever I need.	0	0.0%	0	0.0%	2	0.7%	75	25.0%	223	74.3%

(1* = Very low, 2* = Low, 3* = Medium, 4* = High, 5* = Very high)

3.6 Organizational factors affecting HIS acceptance

The last HIS factors were the organizational factors, which Table 3.6 distribute the participants' responses to its elements. It shows that (65.3%) of the participants reported that the management instructed them to use HIS to be very high. In comparison, (61%) found them to provide a reasonable time for transitioning from old to new systems data medium level. And (57%) rated their adequacy of the working environment, while (50%) rated if the management supported innovating through the use of HIS was a medium level.

Also, participants were required to respond to statements about their participation in the HIS implementation process, where participants got training related to HIS at medium to low rate (54.3%), (24.3%), respectively, as well as involvement in the communication methods to socialize HIS in a medium level (47%). In comparison, their involvement in the HIS designing was low (59.3%), and their involvement in the HIS implementation was (46.7%) medium.

Table 3.6

The responses of the participants to the HIS organizational factors

Statement	1*		2*		3*		4*		5*	
	F	%	F	%	F	%	F	%	F	%
I-Top management support										
1-Management instructed me to use HIS.	0	0.0%	0	0.0%	0	0.0%	104	34.7%	196	65.3%
2-Management provides a reasonable transition period from the old system to the new system.	0	0.0%	55	18.3%	183	61.0	62	20.7%	0	0.0%
3-Management provides an adequate working environment.	19	6.3%	52	17.3%	171	57.0%	54	18.0%	4	1.3%
4-Management gave support to innovate through the use of HIS.	23	7.7%	109	36.3%	150	50.0%	18	6.0%	0	0.0%
II-Participation of End-users in the HIS Implementation Process										
1-I get training related to HIS.	34	11.3%	73	24.3%	163	54.3%	26	8.7%	4	1.3%
2-I was involved in the communication process to socialize HIS.	28	9.3%	79	26.3%	141	47.0%	52	17.3%	0	0.0%
3-I was involved in designing HIS.	101	33.7%	178	59.3%	21	7.0%	0	0.0%	0	0.0%
4-I was involved in implementing HIS.	43	14.3%	69	23.0%	140	46.7%	48	16.0%	0	0.0%

(1* = Very low, 2* = Low, 3* = Medium, 4* = High, 5* = Very high)

3.7 HIS acceptance

Lastly, participants were asked to rate their acceptance to the HIS, in which Table 3.6 shows that their willingness to use HIS at work is high (67.3%) and very high (30.3%), while the intention is found to use it in work as often as possible (41%) high, (42.3%) very high. On the other hand, the response to their willingness to invite colleagues to use HIS was high (44.7%) or very high (28.3%), as well as (52%) and (41%) who had high and very high predictions about the opportunities to use HIS in their work, respectively. Table 3.7 shows the responses of the participants regarding the HIS acceptance.

Table 3.7

The responses of the participants to the HIS acceptance

Statement	1*		2*		3*		4*		5*	
	F	%	F	%	F	%	F	%	F	%
1-I will use HIS for my work.	0	0.0%	0	0.0%	7	2.3%	202	67.3%	91	30.3%
2-I intend to use HIS in my work as often as possible.	0	0.0%	0	0.0%	50	16.7%	123	41.0%	127	42.3%
3-I would invite colleagues to use HIS.	0	0.0%	0	0.0%	81	27.0%	134	44.7%	85	28.3%
4-I Predict there are many opportunities to use HIS to do my work.	0	0.0%	5	1.7%	16	5.3%	156	52.0%	123	41.0%

(1* = Very low, 2* = Low, 3* = Medium, 4* = High, 5* = Very high)

3.8 Analytical results

Table 3.8 shows the descriptive statistics of the overall scores of the scale's domains. The highest mean score (indicating highest influence on HIS acceptance) was for the usefulness and ease of use (mean = 4.511 ± 0.295), ranging from 3.38 to 5 out of 5, followed by acceptance factors (mean = 4.218 ± 0.387) ranging from 3 to 5 out of 5, then technological factors ($4.004/5$, SD = ± 0.228), ranging from 3.13 to 4.5 out of 5, human factors (mean = 3.51 ± 0.197 out of 5) ranging from 3 to 4, while the lowest mean score (indicating the lowest impact on HIS acceptance) was for the organizational factors (mean

= 2.858 ± 0.304 out of 5), ranging from 2 to 4. The overall mean score was 3.744 ± 0.132 , ranging from 3.29 to 4.15 out of 5.

Table 3.8

Descriptive statistics of the overall scores of the scale's domains (St. Dev = Standard deviation, scores are out of 5)

Scale domain	Mean	St. Dev	Minimum	Maximum
Usefulness	4.511	0.295	3.38	5.00
Ease of use	4.511	0.295	3.38	5.00
Human factors	3.510	0.197	3.00	4.00
Technological factors	4.004	0.228	3.13	4.50
Organizational factors	2.858	0.304	2.00	4.00
Acceptance	4.218	0.387	3.00	5.00
Overall	3.744	0.132	3.29	4.15

≥ 3.75 (desirable), 3-3.75 (relatively desirable), 1.5-3 (relative failure), and < 1.5 out of 5 (undesirable HIS acceptance).

Table 3.9 shows the difference in mean scores of usefulness and ease of use of HIS according to participants' demographic factors. The table shows that males between 20 - 29 years old and with experience category 1 - 5 in PMC have significant differences in the usefulness and ease of use of HIS (p -value < 0.001). On the other hand, other socio-demographic factors were unrelated to the beneficial of us& ease of use of HIS.

Table 3.9

Difference in mean scores of usefulness and ease of use factors affecting HIS acceptance according to participants' demographic factors

Demographic factor	Values	Mean score	p-value
Gender	Male	4.56	< 0.001
	Female	4.43	
Age category	20 - 29 years old	4.60	< 0.001
	30 - 39 years old	4.43	
	40 - 49 years old	4.38	
	50 years and older	4.25	
Educational level	Diploma degree	4.45	0.558
	Bachelor's degree	4.52	
	Master's degree	4.52	
	Nurse	4.47	
Job title	Midwife	4.52	0.128
	Doctor	4.57	
	Pharmacist	4.67	
	Laboratory technician	4.65	
	Manager	4.53	
	Physiotherapist	4.48	
Experience years in Palestine Medical Complex (PMC)	Radiology technician	4.46	< 0.001
	1 - 5 years	4.60	
	6 - 10 years	4.54	
	11 - 15 years	4.29	
	16 years or more	4.00	

Binary logistic regression was used to control confounding variables and to identify the variables that could predict higher HIS usefulness and ease of use scores. The model showed that male participants could predict higher HIS usefulness and ease of use scores as they have (84%) more probability of HIS usefulness and ease of use than females (p-value = 0.017), and participants who have 11 to 15 years of experience have (76.7%) less probability of perceived HIS usefulness and ease of use than who have 1 – 5 years of experience (p-value = 0.014).

Table 3.10*Predictors of higher perceived HIS usefulness and ease of use*

Predictors (ref. category)	Categories of relationship	Regression with HIS usefulness and ease of use				
		B	OR	Sig.	95% CI	
Gender (female)	Male	0.610	1.840	0.017	1.116 3.304	–
	30 – 39 YO	- 0.378	0.685	0.294	0.338 1.388	–
Age category (20-29 YO)	40 – 49 YO	0.063	1.065	0.932	0.249 4.550	–
	50 YO and older	- 0.073	0.929	0.957	0.065 13.24	–
	6 - 10 years	- 0.259	0.772	0.452	0.392 1.517	–
Experience (1-5 Ys)	11 - 15 years	-1.458	0.233	0.014	0.072 0.748	–
	16 years or more	-21.765	0.000	0.999	0.000	–

Table 3.11 shows differences in mean scores of human factors affecting HIS acceptance according to participants' demographic factors.

The table shows the participants who have experience between 11 and 15 years (3.494) in PMC have significantly higher scores to be influenced by human factors when using HIS (p-value = 0.047). On the other hand, other factors were unrelated to the human factors affecting HIS experience.

Table 3.11

Difference in mean scores of human factors affecting HIS acceptance according to participants' demographic factors

Demographic factor	Values	Mean score	p-value
Gender	Male	3.527	0.061
	Female	3.484	
Age category	20 - 29 years old	3.516	0.936
	30 - 39 years old	3.500	
	40 - 49 years old	3.515	
	50 years and older	3.519	
Educational level	Diploma degree	3.560	0.079
	Bachelor's degree	3.512	
	Master's degree	3.437	
	Nurse	3.514	
Job title	Midwife	3.513	0.839
	Doctor	3.482	
	Pharmacist	3.581	
	Laboratory technician	3.551	
	Manager	3.530	
	Physiotherapist	3.487	
Experience years in Palestine Medical Complex (PMC)	Radiology technician	3.511	0.047
	1 - 5 years	3.542	
	6 - 10 years	3.488	
	11 - 15 years	3.494	
	16 years or more	3.385	

Binary logistic regression was used to control confounding variables and to identify the variables that could predict higher human factors scores.

Table 3.12 (Appendix G) shows that year of experience in PMC is not considered a factor influencing human factors scores among the participants.

Table 3.13 (Appendix G) shows the difference in mean scores of technological factors affecting HIS acceptance according to participants' demographic factors. It shows that none of the demographic factors are associated with any significant differences in the technological effect on HIS experience (p-value > 0.05).

Table 3.14 (Appendix G) shows the difference in mean scores of organizational factors affecting HIS acceptance according to participants' demographic factors. It shows that participants' age is the only factor with a significant difference in the organizational factors' effect on HIS acceptance, while in general, older participants' age was associated with a significantly higher effect of organizational factors on the HIS acceptance (p-value < 0.001).

In contrast, other demographic factors had no significant difference in their relationship with organizational factors affecting HIS acceptance.

Binary logistic regression was used to control confounding variables and to identify the variables that could predict higher influencing organizational factors affecting HIS acceptance.

Table 3.15 (Appendix G) shows that participants between 30 and 39 years old have 2.581 times the probability of significantly influencing organizational factors affecting HIS acceptance compared to participants between 20 and 29 years old (p-value < 0.001), with no other significant influence between other age groups.

Table 3.16 (Appendix G) shows the difference in mean scores of acceptance factors affecting HIS acceptance according to participants' demographic factors. It shows that participants between 20 - 29 years old and 1 - 5 years of experience in PMC have significantly higher acceptance of HIS (p-value < 0.001).

Binary logistic regression was used to control confounding variables and to identify the variables that could predict higher HIS acceptance. Table 3.17 (Appendix G) shows that participants who are between 30 to 39 years old have a (51.3%) less probability of accepting HIS, while participants within the age group of 40 to 49 years old have a (91.2%) less probability of accepting HIS when compared to participants with age between 20 and 29 years old. In comparison, participants with the age of 50 years old or more have no significant difference in their HIS acceptance. In parallel with this finding, participants with an experience of 6 – 10 years have (54.6%) less probability of accepting HIS compared to participants who have 1 – 5 years of experience, as well as who have experience of 11 to 15 years, who have (84.6%) less probability of this acceptance.

Table 3.18 (Appendix G) shows the difference in mean scores of overall factors affecting HIS acceptance according to participants' demographic factors. It shows that participants between 20 - 29 years old and 1 - 5 years of experience in PMC have significantly higher HIS acceptance (p-value < 0.001).

Binary logistic regression was used to control confounding variables and to identify the variables that could predict higher HIS acceptance. Table 3.19 (Appendix G) shows that age is not considered a factor influencing the overall HIS acceptance. On the other hand,

participants' experience is a significant factor influencing the overall HIS acceptance, where participants with 6 – 10 years of experience have (61.6%) less probability to influence the overall HIS acceptance, while those who have 11 – 15 years of experience have (90.7%) less probability, and who have 16 years and more of experience have (96.5%) less probability to influence, compared to who have 1 – 5 years of experience.

Table 3.20 (Appendix G) aims to investigate the correlations between all subscales of the tool, as well as their correlations with the overall score. It shows that the increased influence of usefulness subscale is significantly correlated with decreased influence of participation in the HIS implementation process and increased acceptance. In contrast, increased the ease of HIS use is correlated with increased compatibility, with increased compatibility significantly associated with increased top management support. Moreover, increased information security was significantly correlated with increased information quality, as well as increased self-efficacy significantly correlated with increased system quality, while social influence had no significant correlation with any subscales. Also, increased information quality was significantly correlated with increased system quality and management support, while all subscales were significantly correlated with increase in overall HIS acceptanc.

Chapter Four

Discussions and Conclusions

4.1 Influence of Technological factors on acceptance with health information Systems (AVICENNA)

The health system of the Palestinian country features with multiple of strengths points. These points contain the health information system (AVICENNA), in comparison with other nations in the region with similar degree of economic levels, multiple high qualified, experienced and motivated health professionals, consisting from clinicians, planners, administrators, technicians, researchers, public health workers & a strong fundamental of local facilities. At the same time, there are ways to strengthen the Palestinian health system to reach specific health goals over time.

This study aimed to identify factors influencing the acceptance of HIS among healthcare providers in Palestine. The result of our study found that most study participants reported technological factors, consisting of system quality and information quality, as major factors influencing their acceptance to health information systems. Its expected because they reflect one of the most important principles of health that all countries seek to achieve, which is to maintain the continuity of providing health services at all times and circumstances.

Consistency of care is a way to ensure that the patient-centered care team is cooperatively included in continuing of healthcare management toward a mixed goals of high-quality medical care. Continuity of care enhance patient safety & guarantee quality of care over time. Enhancing continuity of care consisting sharing patient medical information across providers and promoting trust between patients and healthcare team. It also consist from ensuring a patient has safe, coordinated transitions between various healthcare facilities and providers (Al-Marroof et al., 2021).

World Health Organization (WHO) has taken the principle of continuity providing health services with high quality as a prerequisite for evaluating health systems in different countries. Many efforts have been made by the Palestinian Ministry of Health to maintain the consistency of providing health services, as it seeks to provide all the necessary needs for the health information system in terms of updating and developing the infrastructure

of the health information system. Based on the reports of the Palestinian Ministry of Health, it has established a special unit for engineering and computer, which in turn supervises the daily follow-up of the health information system to guarantee the system does not stop and to deal with any defect may affect the system.

The Ministry also seeks to benefit from the global development of health information systems by providing continuous training courses in many leading countries in health information systems for the staff of this unit. Based on the results, the existence of an integrated health information system that provides its services at all times was one of the most important reasons that affected the acceptance of health care providers with health information system. This result is consistent with studies that discussed the factors that affect the acceptance of health care providers with health information systems (Hsiao et al., 2011). A study factors affecting acceptance of hospital information systems a nursing perspective Survey research in the selected case hospital in Taiwan as participants. A total of 545 questionnaires were collected found, technological factors influence acceptance of health care provider with health information system. System quality delivered by the HIS make the user acceptance increases. A high-quality system will enhance high-quality information (Saghafian et al., 2021). Providing explanations the necessity of making all the essential information provided & easy to deal with & ensuring that the information recorded in the system is up to date.

While the technological aspects in many other studies were among the factors that can be easily guaranteed in many studies due to the tremendous technological development in health systems in addition to the ease of obtaining them compared to what it was in the past (Alipour, Mehdipour, & Karimi. 2019). Villalba-Mora et al. (2015), studied the degree of use of Health Information Technologies (HIT) services, as well as the factors that impact this, across specialized and primary care physicians in Andalusia, Spain. Technical difficulties do not appear to impede the implementation of Health Information Technologies.

On the contrary, lack of attention to technological factors was one of the most important obstacles that affected the acceptance of health care providers to the health information system in many previous studies. (Kose et al., 2020) systemic review of 27 included studies conducted to improved understand the challenges that have faced certain

healthcare institutions from using at least a basic electronic health record system. Technical concerns, technical Support and technical Infrastructure were reported as barriers to acceptance with HER.

Unfortunately, Palestinian health information system do not have integrated & complete HIS aspects, which extends the response time of HIS, especially during peak hours, as many users of the system reported that there is a noticeable slow down in the performance of the system at specific times, especially on Sundays of every week, as it becomes the response time of the system is much longer than usual days, the efficiency of the system is significantly reduced, and sometimes the data is inaccurate, which leads to less effective patient care. Therefore, the quality of information delivered incompletely by the health information system. The significant increase in the number of health care providers using the system was one of the main causes of this problem. According to the reports of the Palestinian Ministry of Health, the number of health information system users when it was officially approved in the Palestine Medical Complex did not exceed 250 users in 2011. There are now more than 1,000 users of the health information system, and this noticeable increase must have negative effects on the speed of the system's response.

Where as, this rising in the number of users of the system from health care providers has greatly increased the amount of data entered into the system, and this requires continuous and intensive updating of servers, operating systems and storage. In addition, the devices used, such as computers and others, are still since the adoption of the health information system since 2011, despite many updates implemented since that year. Finally, it must be recalled that the financial matters related to it still constitute the biggest obstacle to the implementation of many of the expected reforms to the health information system, as the modernization & improvements of the system requires large sums, because it is a program was donated to the benefit of the Palestinian Ministry of Health.

Despite these Obstacles, relying on the results of our study, the existence of an integrated health information system provides services at all times was one of the most important reasons affected the acceptance of health care providers with health information system.

4.2 Influence of human factors on acceptance with health information Systems (AVICENA)

Human factors that consist of (compliance, anticipation of information security, self-efficacy, and social impact (Alipour, Mehdipour, & Karimi. 2019) is one of the basic issues that ensure the success of adapting to implementation and change management of health information systems, in addition to that it is one of the most essential reasons that led to the use of Health Information System Maintaining and significantly increasing data confidentiality and privacy considerations.

In this current study, although this system has the potential to increase access to clinical information and enhanced clinical research and public health searches. But, the use of this system has open doors to new challenges, such as issues about the security of health information. Concerns such as keeping confidentiality & forbidden unauthorized reaching to clinical data are among the main ones that require adequate attention during all levels of data entry, storage, use and transmission. Therefore, HIS with complete and easy-to-use security features can improve users' perceptions of advantage.

However, our study revealed that (37%) of the study participants noticed a low level of HIS features that prevent unauthorized persons from accessing data, this finding was surprising considering the fact of information security is one of the most essential factors impacting on HIS. This is mostly because hospitals collect, use, and store personal and clinical data, the risks of data leakage and invasion of privacy and security in their facilities are more serious than in another institution. With risk factors among the most important reasons that formed basic barriers that hinder the process of adapting health care workers to the health information system, thus led to raising problems for both employees and organizations.

This is consistent with study (Saghafian et al., 2021) when they systematically reviewed 27 included studies conducted to understand the barriers which prevent some healthcare institutions from using at least a basic electronic health record system. Privacy concerns were mentioned as major barriers to the operations of adapting health care providers to the electronic health record system. The inadequate of instructions for dealing with security problems, the lack of clear and documented protocols for managing health information were among the most important reasons that constituted basic barriers

to the process of adapting care providers. In a similar study conducted by Handayani et al. (2017) they stated that maintaining data consistency, validity and reliability throughout its lifetime is what integrity requires. The data must not be modified during transmission, and precautions must be taken to prevent unauthorized parties from altering the data (for example, in breach of confidentiality). They considered it one of the most important criteria that must be available in every approved health information system.

Based on the previous studies, there are two main challenges facing implementation of HIS are data security and privacy issues, all health institutions seek to find an appropriate solutions for them.

In fact, the concerns of health information security is much more complex than expected. On the other hand, patient information is very sensitive and needs to be maintained secure and confidential, while different health care providers may need to access them. It is expected that health care workers will be trained in the principles of information security and data protection. Otherwise, the lack of training, lack of instructions for managing security issues, and lack of clear and documented policies to deal with risk factors were the main reasons formed major barriers to the process of adapting health care providers with health information system, thus created problems for employees and organizations.

Therefore, managers and decision makers must pay more attention to security issues in accordance with medical rules, regulations and laws to ensure the optimal use of health information and avoid making mistakes resulting from the misuse of such information on the one hand and on the other hand, to ensure the protection of the confidentiality of medical information, it is only viewed by authorized persons to do so using appropriate methods to achieve these goals.

The AVICENNA health information system has potentials to enhance the accessibility of clinical data & the quality of health care. In addition, the health information system achieved the requirements of data protection and information confidentiality before its implementation, according to the opinions of experts in this field, and the reason for this is that the health information system was implemented and designed. Specifically for the institutions of the Palestinian Ministry of Health, where the donation was given and implemented upon various stages with the supervision of the World Health Organization. This is one of the important features of this system that affects the acceptance of health

care providers to the health information system, in a previous study of (Kruse, Kothman, et al., 2016) which included a systematic review of 31 studies conducted to compile a current and comprehensive list of facilitators to approve electronic health records. Patient data access, information portability, and security have been mentioned in the literature as some of the key facilitators of HIS acceptance.

To investigate information security in hospitals, 3 main aspects must be observed, which administrative, technical and physical protection are. It is necessary to establish a specific protocol for dealing with medical data and patient information, to ensure implementation by the competent authorities (Saghafian et al., 2021).

In view of the results of the current study, the problems of privacy, information security and confidentiality were among the most important negative points in this system, and the optimal solution must be used to ensure that the problems arising from the breach of information confidentiality are avoided.

4.3 Training and its Impact on health Information System (HIS) acceptance

Despite the great importance shown by the Palestinian MOH to the issue of training health care providers to use the correct information system as mentioned previously, the results of this study reflect the reality, which appears to be somewhat different, as when the participants were required to answer questions relevant to their receiving training to use the health information system. HIS participants received a medium to low score (54.3%) and (24.3%), respectively. One of main reasons for the poor training provided to health care providers to use the health information system is the financial obstacles. The intensive training asked to teach staff and service providers to adopt the health information system (HIS) is one of the largest implementation costs required to ensure optimal use of the system to providing high quality medical care. The Palestinian government, like many countries with a similar situation, suffers from difficult financial conditions, which makes spending very limited and affiliation only to some free or low cost courses. This reflects the few training opportunities that are available to healthcare providers.

The extensive training is needed for qualifying staff and providers to adopt an health information system. HIS is one of the larger aspects of implementation cost, financial obstacles are not limited to spending on training only, but extend to many inherent matters

such as closing clinic, declining appointment availability, or re-assessments of workloads training process, employing temporary staff to fill gaps. Finding, renting, and scheduling training facilities, building out training center internally, providing food, paying overtime, enhancing time and resources to adjust work operations and templates in response to concerns comes from training, and providing training materials, manuals, or instructional videos. In contrast, the cost of training for HIS adoption ought to be considered as investment rather than expense because, without it, institutions risk spending money on HISs without awaring of its benefits. Investing in the training of basic units of internal staff members on all stages of the system pays large dividends for a network and health services.

The adoption of the health information system led to many changes, and it was necessary to pay attention to changes to avoid negative effects that could lead to system failure. Training to use the health information system is one of the most important things that must be taken care of and work to strengthen, because according to many studies it has a direct impact on the failure of the health information system. (Nadri et al., 2018) mention that at study of training and its effects on Hospital Information System (HIS) progress ,which done at Isfahan University of Medical Sciences: a number of health Information Systems fail, because lack of providers adequate training. Training is important for users and staff to learn how to adotthe new system and integrate them with these changes.

Unfortunately, often with lack of training, the system usually operate, but does not reach tohigh expectations. In other hand, training has been identified as one of the main key elements responsible for guarantee successful health information systems adoption. (Ismail et al., 2015) added that at a study of Adoption of Hospital Information System (HIS) in Malaysian Public Hospitals which aimed to determine aspects impact on the HIS usage across different satges of HIS's hospitals shown that training improve system adoption and helps providers to be more comfortable while using it and so directly increases its acceptance. It has found that training is strongly correlated with the system adoption and the enhancing of decision-making, providers' efficiency, and effectiveness, provider's satisfaction, providers' positive attitude and HIS success. Identifying and training health care providers will produce fndemental of knowledge able staff providers knowing the clinic's processes with the needs of the health information system. Health care providers should have clinical experience, all of them sought to be trained well on HIS functions to be aware of the impact on the whole data flow.

Overall, the training of health care providers was highlighted as the best choice for improving capacity on health information system requirements. In addition, continuously follow up trainers were very necessary by providing courses directly involved in improving the use of the health information system and organizing educational workshops in adoption of current information technologies in order to keep pace with the global development in this field.

AlQudah et al. (2021) resulted that without continuous, structured follow-up training, the advantages of HIS are never optimally reached. Through the above with regard to training educational process seem important to make an appropriate attitude through health care users. Enhancing knowledge of system providers about the features, goals, advantages and positive impact of the system while keeping on the confidentiality and security of the HISs would decline the change resistance rates and adoption rates of HIS acceptance.

4.4 Future Recommendations

- 1- Improving quality, value and use of health information system by developing policies and offering incentives to enhance dissemination & use of such data at local regional and global levels.
- 2- Enrolling and support local technology company to make similar health information system to be used in Palestinian health facility.
- 3- Improving role of controlling, managing and accountability at information security and confidentiality to ensure the optimal uses of such information.
- 4- Collaborating with other nongovernmental health care providers to reduce cost, time, information overlapping and accumulation by sharing health information.
- 5- Future studies must address barriers that health care providers may face that prevent them from providing adequate acceptance with health information system.
- 6- To evaluate currently available health care providers education tools, and assess the impact of education interventions on the knowledge & awareness of care providers involved in health care systems.

4.5 Limitations & Strengths

Several limitations of this study should be acknowledged. First, factors that influencing acceptance of health care providers with health information system were assessed by a quantitative method and this provides us only with general information. A combination of quantitative and qualitative approach that includes in-depth interviews, focus group discussions and participant observation would have been more effective. Second, our study focused on health care providers' perspective and did not explore the perspective of patients or policy makers.

Lack of information regarding factors that influence the acceptance of health information system (Avicenna) among health care providers, despite its application in all Palestinian government hospitals for no less than seven years in some hospitals.

In spite of these limitations, this study provided additional new information to the existing literature in Palestine about factors that influencing acceptance of health care providers with health information system.

4.6 Conclusion

This study has investigated factors influencing acceptance of HIS among health care providers in Palestine. Technological aspects which contains variables about the quality of the system and the information as major factors influenced the acceptance of health information system. Other aspects is the need of training and anticipation of information security which were mentioned according to the participants. Having a coherent health information system is one of the most important strategic goals for all governments. The urgent and continuous need to provide high quality health services, in addition to the escalating development in the environments of health information systems, made it necessary for health policy makers to find quick, effective solutions to deal with health information system problems, due to the importance of the system in the continuity for providing a high quality health services. There are many efforts that the Ministry of Health is expected, in order to develop & maintain the health information system, due to the great challenges facing the Ministry, especially the financial challenges, which are the biggest obstacle.

List of abbreviations

Abbreviations	Meaning
HIS	Health information system
HIT	Health information technology
EHR	Electronic health record
CHRs	Computer health records
AVICENNA	Palestinian health information system
PMC	Palestine medical complex
PMOH	Palestinian ministry of health
SPSS	Statistical Package for Social Science
TAM	Technology acceptance model
UTAUT	Unified theory of acceptance and use of technology

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Appendices

Appendix A

A questionnaire designed by (Handayani et al., 2017)

Section 1: Demographic characteristic of study sample

Gender	<input type="checkbox"/> Male	<input type="checkbox"/> Female	
Age	<input type="checkbox"/> <20	<input type="checkbox"/> 20 - 30	
	<input type="checkbox"/> 20-30	<input type="checkbox"/> 30-40	
	<input type="checkbox"/> 40-50	<input type="checkbox"/> >50	
Education level	<input type="checkbox"/> Diploma	<input type="checkbox"/> Bachelor's	
	<input type="checkbox"/> Resident	<input type="checkbox"/> Specialist Doctor	
	<input type="checkbox"/> Bachelor's	<input type="checkbox"/> Master's	
	<input type="checkbox"/> Doctoral		
Marital status	<input type="checkbox"/> single	<input type="checkbox"/> married	
	<input type="checkbox"/> divorce	<input type="checkbox"/> widow	
Position	<input type="checkbox"/> Doctor	<input type="checkbox"/> Nurse	
	<input type="checkbox"/> laboratory specialist	<input type="checkbox"/> radiologist	
	<input type="checkbox"/> Administrative	<input type="checkbox"/> Management	
	<input type="checkbox"/> pharmacy	<input type="checkbox"/> physical therapy	
Place of living	<input type="checkbox"/> city	<input type="checkbox"/> town	
	<input type="checkbox"/> village	<input type="checkbox"/> refugee camp	
For how long have you been serving in the facility?	<input type="checkbox"/> < 1 yea	<input type="checkbox"/> 1 – 3 year	<input type="checkbox"/> 4–7 year
	<input type="checkbox"/> 8 – 11 year	<input type="checkbox"/> > 11 year	

Section 2 HIS acceptance by users

	1	2	3	4	5
A- Perceived usefulness:					
1-Using HIS would enhance my effectiveness in my job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-I would find HIS useful in my job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-Using HIS would improve my performance in my job.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-Using HIS at work would improve my productivity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
B- Perceived ease of use:					
1-I would find the HIS easy to use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-I would find it easy to get the HIS to do what I want it to do.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-It would be easy for me to become skillful in the use of the HIS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-Learning to operate the HIS would be easy for me.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
C- human factors:					
- compatibility:					
1-HIS usage does not change (according to) the way I work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-HIS usage does not change (as appropriate) preferences of my practice.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-Applications can be used in accordance with the needs of the provision of services I Provide.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
- Information security:					
1-Confidentiality, availability, and data consistency or validity is an important feature of the HIS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-HIS provides features that can prevent unauthorized people to access the data in HIS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

<p>3-HIS provides features that can prevent or reduce user errors to prevent medication errors.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>4-HIS provides features that can prevent unauthorized codification by an unauthorized person to protect the data in order to remain consistent or valid.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>- self-efficacy : 1-I can finish my work with HIS even though I have not used a system like this before.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>2-I can finish the job by using HIS if I have been using a similar system to do the same job.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>3-I was able to realize the results of training related to information technology or HIS so that I can use the HIS.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>- social influence: 1-People who are important to me suggest using the HIS.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>2-I use HIS because my co-workers also use HIS.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>3-People who influence my behavior thought that I should use HIS.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>D- Technological factors :</p>	
<p>- information quality: 1-The information output released by HIS is clear and easy to read.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>2-The HIS can provide correct and consistent information.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>3-The information covered in the HIS meets my work needs.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>4-HIS provides output in a format that is easy to understand.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>-System quality:</p>	
<p>1-HIS provides all the functions involved in completing my work.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>2-The HIS can be linked to or integrated with information from other systems.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<p>3-HIS has a fast response time.</p>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>

4-HIS provides services 24/7 or whenever I need.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-organizational factors : - Top management support :					
1-Management instructed me to use HIS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-Management provides a reasonable transition period from the old system to the new system.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-Management provides an adequate working environment, such as a fun workplace, a Sufficient number of computers, appropriate workload, etc.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-Management gave support to innovate through the use of HIS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
-Participation of End-users in the HIS Implementation Process:					
1-I get training related to HIS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-I was involved in the communication process to socialize HIS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-I was involved in designing HIS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-I was involved in implementing HIS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
F- HIS acceptance :					
1-I will use HIS for my work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2-I intend to use HIS in my work as often as possible.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3-I would invite colleagues to use HIS.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4-Predict there are many opportunities to use HIS to do my work.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Appendix B

Table .1 “Studies on factors influencing the acceptance of health information systems”

Author(s)	Country	Study objectives	Methodology & sample size	Tool of study	Outcomes
<u>Internationally</u>					
(Kalesamy, 2021)	Hungary	To review the privacy and security factors' effect on HIS	430 academic staffs	Survey using a modified version of the UTAUT model	1-privacy and security in healthcare are the main factors influencing adaptation with HIS.
(Kose,JohnRayner et al., 2020)	Turkey	To measure the adoption rates and degrees of EHR use in Turkish hospitals	600 hospitals in 2014 and 2017	Utilizes the Electronic Medical Record Adoption Model survey	1- 63.1% of all hospitals in Turkey have even basic EHR functions. 2- 36% of all hospitals adopte comprehensive EHR systems.
(Alipor et al., 2017)	Iran	To determine the aspects influensing hospital information system acceptance	550 users of the system in Public Hospitals of Zahedan University of Medical Sciences	Questionnaire	The most factors affects on the users' intention to accept a hospital information system were Perceived usefulness of the system, social impact, system quality, perceived ease in use of the system, and top managers' supports
(Rambeka, 2018)	Kenya	To investigate how security and privacy problems affects the adoption of CHR	Descriptive survey research design (n=100) Using stratified random sampling techniques	Questionnaire	1- Kisii County still has low adaptation and meets resistance from healthcare providers. 2-Medical training directions should adapt to the use of CHRs to accelerate CHR adoption.
(Ismail et al., 2015)	Malaysia	To identify aspects affecting the HIS adoption	Quantitative cross-sectional survey. (n= 229 participants)	Questionnaire	There are main differences between aspects affecting HIS adoption in the hospitals studied.
Kruse, Kothman, et al., 2016	United States	To compile aongoing and comprehensive list of facilitators and	Systematic review. Team members selected a final list of articles	Systematic review of core clinical/academic journals and MEDLINE	1- 25 adoption facilitators were identified; the majorities were efficiency, hospital size and quality, access to information and ability to transfer information.

		challengestot he adoption of HIS in hospitals	through consensus meetings (n=31).		2- A total of 23 challenges to adoption were identified in the literature. The majority were; cost, time-consuming, perception of uselessness, the transition of information and implementation problems.
(Handayani et al .2017)	Indonesia	To creatsa model of Hospital Information System (HIS) user acceptance	4 privately owned hospitals and 3 government-owned hospitals 2,028 questionnaires	Questionnaire	1-Human characteristics and organizational characteristics significantly affects users' opinions in both the ease of use & the usefulness of the HIS 2-Different aspects may influence the acceptance of each user in each kind of hospital related the use of HIS.
(Garavand et al., 2016)	Iran	To defined the most important Aspects affecting the adoption of HIT	Systematic review. (n=33)	Systematic review.	1- Ease of use, usefulness, and social effects increase the percentageof the adoption of health information technology.
(Kruse et al., 2015)	United States	To identify EHR adoption factors	Systematic review. (n=22)	Systematic searches of Cumulative Index of Nursing and Allied Health Literature (CINAHL)	1-Facilitators containsaccess to information & error reduction. 2-challenges include initial costs, user perceptions and implementation issues.
(Gagnon, et al.,2015)	Canada	To review factors associated with the adoption of HIS by healthcare professionals	Systematic review. (n=33)	Specific Grid	1- System usefulness was the main common facilitating factor,then came the ease of use. 2- Technical concerns and time were the main frequent limiting aspects identified.
<u>Nationally</u>					
(Ifinedo, 2016)	Kuwait	To discover the status quo of information management practices in public hospitals providing secondary care services	Convergent-design mixed methods approach (N = 6hospitals)	Accreditation-related data of compliance with the information management standard at all secondary care public hospitals	1- Public hospitals have made positive progress in compliance with the information management standard. 2- problemsstill exist with developing & implementing an information management plan and access to the Internet by staff.

(AlJarullah et al., 2018)	Kingdom of Saudi Arabia	To identify aspects that are likely to influence primary care physicians' acceptance of EHRs	factors of user adoption of Information Technology (IT) were identified by relying on theories and models of user adoption of IT. N = 4 theories	Factors were identified by depending on extensive literature reviews and empirical findings.	1- practices, reception of usefulness, ease of use, social impact, self-efficacy, reception of threat to physician autonomy, confidentiality issues, and physician participation were proven to have a significant direct effects on physicians' acceptance of EHRs.
Locally					
(Adi A. AlQudah et al 2021)	Dubai	to systematically review the articles published on technology acceptance in healthcare	1768 searches collected, 142 empirical studies	PubMed, Xplore, Springer, ACM, Science Direct, and Google Scholar	1- TAM and UTAUT are the main prevailing models in explaining what influence the acceptance of different healthcare technologies between different user groups, settings, and countries 2- anxiety, computer self-efficacy, innovativeness, and trust are the most influential factors affecting various healthcare technologies
(Jabareenet al., 2020)	Jordan and Palestine	To define health informatics (HI) use and assess health professionals' training needs in Jordan and Palestine.	A descriptive cross-sectional design. (n=14 hospitals)	Questionnaire	2- 73.6% of participants agreed that their hospitals needed support to adopt HI systems. 3- 86.0% of healthcare professionals reported that they need for skills to monitor diagnosis and treatment. 3- Using medical records (84.7%), managing electronic patient data (84.5%) and using patient medical records to conduct clinical research (83.4%) from other skills needed.

Appendix C

The final questionnaire copy which was used in our study and it was reviewed by specialized in health information and health management



العوامل المؤثرة في قبول نظام المعلومات الصحية بين مقدمي الرعاية الصحية في فلسطين

زملاتي الاعزاء :

يهدف هذا البحث الى التحقق من العوامل المؤثرة في قبول نظام المعلومات الصحية بين مقدمي الرعاية الصحية في فلسطين لاستكمال متطلبات الحصول على درجة الماجستير في برنامج إدارة الصحة العامة من جامعة النجاح الوطنية. ارجو الاجابة على الاسئلة الموجودة بموضوعية عن طريق وضع علامة (٧) في المكان الذي يناسب تصورك الشخصي. سيتم استخدام هذه البيانات لأغراض البحث العلمي فقط. ستبقى ردودك سرية ، ولك الحق في الانسحاب وقتما تشاء من الدراسة . نحن واثقون من تعاونكم ودعمكم للبحث العلمي.

ارجو منك الاجابة على القسم الأول المتعلق بالخصائص الديموغرافية ويتكون من خمسة اسئلة . ثم الاجابة على أسئلة القسم الثاني المتبقين ويتكون من احدى واربعين سؤال وهي متعلقة بعوامل قبول المستخدم لنظام المعلومات الصحية من حيث :- الفائدة المتصورة وتوقع أداء نظام المعلومات الصحية و سهولة استخدام نظام المعلومات الصحية والعوامل البشرية والعوامل التكنولوجية والعوامل التنظيمية المتعلقة بنظام المعلومات الصحية واخيرا قبول المستخدمين لنظام المعلومات الصحية علما بان المشاركة في ملء هذا الاستبيان لا تتجاوز (15) دقيقة نامل فيها دقة التقويم وقوة التركيز. الباحث الرئيس: فايز احمد يوسف ابو سفيان المشرف الاكاديمي : د. وفاء ميناوي ، داية صوالحة

للتواصل:Fayez121995@gmail.com

Researcher: Fayez Abu Sofyan

Department of Pharmacy and Health Sciences, College of Graduate Studies, Al-najah national university.

Title of study:

Factors influencing adaptation of health information system among health care providers in Palestine

Please read and complete this form carefully. If you are willing to participate in this study, ring the appropriate responses and sign and date the declaration at the end. If you do not understand anything and would like more information, please ask.

The interview will take about 15 minutes.

Your participation is voluntary. There are no anticipated risks or benefits to your participation. Please sign this form if you agree to participate -----, date-----

Thank you for your interest in the study.

الجزء الأول: البيانات الاجتماعية – الديموغرافية:							
1. الجنس: <input type="checkbox"/> أ- ذكر <input type="checkbox"/> ب- أنثى							
2. الفئة العمرية: <input type="checkbox"/> أ- أقل من 20 سنة <input type="checkbox"/> ب- من 20 إلى 30 سنة <input type="checkbox"/> ت- من 30 إلى 40 سنة <input type="checkbox"/> ج- أكثر من 50 سنة							
3. المؤهل العلمي: <input type="checkbox"/> أ- دبلوم <input type="checkbox"/> ب- بكالوريوس <input type="checkbox"/> ج- ماجستير <input type="checkbox"/> د- دكتوراه							
4. المسمى الوظيفي: <input type="checkbox"/> أ- ممرض/ة <input type="checkbox"/> ب- دكتور/ة <input type="checkbox"/> ج- صيدلاني/ة <input type="checkbox"/> د- إخصائي/ة مخبري/ة <input type="checkbox"/> هـ- إداري/ة <input type="checkbox"/> و- علاج طبيعي <input type="checkbox"/> ز- فني/ة أشعة							
5. سنوات الخبرة في مجمع فلسطين الطبي؟ : <input type="checkbox"/> أ- أقل من سنة <input type="checkbox"/> ب- من 1-5 سنوات <input type="checkbox"/> ج- من 6-10 سنوات <input type="checkbox"/> د- من 6-10 سنوات <input type="checkbox"/> هـ- من 11-15 سنة <input type="checkbox"/> و- أكثر من 16 سنة							
الجزء الثاني: قبول المستخدم لنظام المعلومات الصحية							
عوامل قبول المستخدم لنظام المعلومات الصحية			درجة قبول المستخدم لنظام المعلومات الصحية				
			1	2	3	4	5
			منخفضة جدا	منخفضة	متوسطة	عالية	عالية جدا
1- الفائدة المتصورة وتوقع أداء نظام المعلومات الصحية							
1. إن استخدام نظام المعلومات الصحية من شأنه أن يعزز فعاليتي في أداء وظيفتي <input type="checkbox"/>							
2. نظام المعلومات الصحية مفيداً في اتمام مهامى على اكمل وجه <input type="checkbox"/>							
3. استخدام نظام المعلومات الصحية يحسن من أدائي في وظيفتي <input type="checkbox"/>							
4. وجود نظام المعلومات الصحي سيساهم بزيادة إنتاجيتي بالعمل <input type="checkbox"/>							
2- سهولة استخدام نظام المعلومات الصحية بناء على تصور المستخدمين							
1. نظام المعلومات الصحية سهل الاستخدام. <input type="checkbox"/>							
2. يطبق نظام المعلومات الصحية الأوامر المطلوب تنفيذها بسلاسة وسهولة <input type="checkbox"/>							
3. من السهل بالنسبة لى أن أصبح ماهراً ومتمكناً في استخدام نظام المعلومات الصحية. <input type="checkbox"/>							
4. تعلم استخدام نظام المعلومات الصحية والتعامل معه أمراً سهلاً بالنسبة لى <input type="checkbox"/>							
3- العوامل البشرية							
i. توافق نظام المعلومات الصحية (تطابقه وثباته)							
1. لا يتغير استخدام نظام المعلومات الصحية (وفقاً لـ) طريقة عملي <input type="checkbox"/>							
2. لا يغير استخدام نظام المعلومات الصحية (وفقاً لـ) تفضيلات ممارستي. <input type="checkbox"/>							
3. يمكن استخدام التطبيقات وفقاً لاحتياجات توفير الخدمات التي أقدمها. <input type="checkbox"/>							

درجة قبول المستخدم لنظام المعلومات الصحية					عوامل قبول المستخدم لنظام المعلومات الصحية
1	2	3	4	5	
منخفضة جدا	منخفضة	متوسطة	عالية	عالية جدا	
					ii. أمن المعلومات في نظام المعلومات الصحية
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. سرية المعلومات، توفرها، واتساق البيانات أو صحتها ميزة مهمة للنظام
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. يوفر نظام المعلومات الصحية ميزات من شأنها منع الأشخاص غير المخولين من الوصول الى معلومات النظام.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. يوفر نظام المعلومات الصحية ميزات من شأنها منع أو تقليل اخطاء المستخدمين من اجل تفادي الاخطاء الطبية
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. يوفر نظام المعلومات الصحية ميزات يمكنها منع التدوين غير المخول أو المصرح به من قبل شخص غير مصرح له لحماية البيانات من أجل أن تظل متنسقة أوصالحة
					iii. الكفاءة الذاتية لنظام المعلومات الصحية
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. يمكنني استخدام نظام المعلومات الصحية للقيام بوظيفة معينة اذا تم القيام بها مسبقاً باستخدام نظام آخر مشابه.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. يمكنني انهاء عملي باستخدام نظام المعلومات الصحية على الرغم من عدم استخدامي لنظام مشابه من قبل
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. كنت مدركاً للنتائج التي حصلت عليها من التدريب المتعلق بتكنولوجيا المعلومات او نظام المعلومات الصحية ما يمكنني من استخدام هذا النظام مستقبلاً
					iv. التأثير الاجتماعي لنظام المعلومات الصحية
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. تم اقتراح نظام المعلومات الصحية من قبل أشخاص مقربين
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. أستخدم نظام المعلومات الصحية لأن زملاء العمل يستخدمونه
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. الأشخاص ممن لهم تأثير على سلوكي المهني يعتقدون ضرورة استخدامي لنظام المعلومات الصحية
					4 العوامل التكنولوجية
					i. جودة المعلومات الصحية
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. مخرجات نظام المعلومات الصحية واضحة وسهلة القراءة
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. يمكن لنظام المعلومات الصحية توفير معلومات صحيحة وثابتة.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. المعلومات المدرجة في نظام المعلومات الصحية تلبي احتياجات عملي
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. يوفر نظام المعلومات الصحية مخرجاته بصيغة سهلة الفهم

درجة قبول المستخدم لنظام المعلومات الصحية					عوامل قبول المستخدم لنظام المعلومات الصحية
1	2	3	4	5	
منخفضة جدا	منخفضة	متوسطة	عالية	عالية جدا	
					ii. جودة نظام المعلومات الصحية
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. يوفر نظام المعلومات الصحية جميع الوظائف التي ينطوي عليها إكمال عملي
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. يمكن ربط نظام المعلومات الصحية مع معلومات من أنظمة صحية أخرى.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. يتمتع نظام المعلومات الصحية بفريق اسناد سريع الاستجابة
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. يوفر نظام المعلومات الصحية خدمات 7/24 او عند الحاجة بشكل سريع
					5- العوامل التنظيمية
					i. الدعم المقدم من الادارة لاستخدام نظام المعلومات الصحية
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. تقر الإدارة بضرورة استخدام نظام المعلومات الصحية
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. توفر الإدارة فترة انتقالية معقولة من النظام القديم إلى الجديد.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. توفر الإدارة بيئة عمل مناسبة ومجهزة لاستخدام نظام المعلومات الصحية
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. تقدم الإدارة الدعم للابتكار من خلال استخدام نظام المعلومات الصحية
					ii. مشاركة المستخدمين في عملية تنفيذ نظام المعلومات الصحية
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. أحصل على تدريب متعلق ب نظام المعلومات الصحية.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. لقد شاركت في عملية التواصل بين المستخدمين لجعل نظام المعلومات الصحية شائع الاستخدام.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. لقد شاركت في تصميم نظام المعلومات الصحية.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. لقد شاركت في تنفيذ نظام المعلومات الصحية
					6- قبول المستخدمين لنظام المعلومات الصحية
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	1. سأستخدم نظام المعلومات الصحية لاداء متطلبات وظيفتي
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2. سألتزم باستخدام نظام المعلومات الصحية في عملي بقدر الإمكان.
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	3. أود دعوة الزملاء لاستخدام نظام المعلومات الصحية
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	4. أتوقع أن هناك العديد من الفرص لاستخدام نظام المعلومات الصحية لاستكمال متطلبات وظيفتي

شكرا لحسن تعاونكم

الباحث: فايز ابو سفيان

Appendix D

Informed Consent

إقرار الموافقة على المشاركة في البحث

Consent Form

أنا الموقع أدناه قد قرأت/فهمت المعلومات المقدمة لدي عن البحث وقد تمت الإجابة على كافة أسئلتي بشكل مُرضي، أوافق على المشاركة في هذا البحث، مع احتفاظي بالحق في أن أنسحب من البحث في أي وقت دون سبب ومن دون وقوع ضرر عليّ أو تحيز ضدي في أي وقت.

وقد أبلغت بأهداف البحث والبيانات/العينات التي سيتم جمعها وكيفية التعامل مع هذه البيانات/العينات بعد الانتهاء من البحث.

وأنا أفهم أن جميع المعلومات التي أدلي بها أو يتم جمعها عني ستعامل بسرية تامة ولن تعلن بأي شكل قد يؤدي إلى التعريف بهويتي.


كما أوافق على أنه يمكن نشر بيانات البحث مع مراعاة سرية المعلومات كما ذكر أعلاه.

التوقيع:

Appendix E

Ethical approval obtained from the Institutional Review Board (IRB) at AN-NAJAH University in Nablus

An-Najah National University
Faculty of Medicine & Health
Sciences
Institutional Review Board



جامعة النجاح الوطنية
كلية الطب وعلوم الصحة
لجنة الأخلاقيات البحث العلمي

Ref: Mas. July, 2022/2

IRB Approval Letter


Title of Research:
Factors influencing adaptation of health information system among health care providers in Palestine


Submitted by:
Fayez Abu Sofyan

Supervisor:
Wafaa Menawi, Raya Sawalha

Approved:
4th July 2022

Your Study Title "Factors influencing adaptation of health information system among health care providers in Palestine" reviewed by An-Najah National University IRB committee and was approved on 4th July 2022.


Hasan Fitian, MD
IRB Committee Chairman



Nablus - P.O Box :7 or 707 | Tel (970) (09) 2342902/4/7/8/14 | Faximile (970) (09) 2342910| E-mail :
IRB@najah.edu

Appendix F

Written permission from MOH

An-Najah
National University
Faculty of Graduate Studies



جامعة
النجاح الوطنية
كلية الدراسات العليا

التاريخ : 2022/8/18

حضرة الدكتور احمد البيتاوي المحترم
المدير التنفيذي لمجمع فلسطين الطبي

الموضوع: تسهيل مهمة الطالب / فايز احمد يوسف ابو سفيان رقم تسجيل (11952778)
تخصص ماجستير ادارة الصحة العامة

تحية طيبة وبعد ،،،

الطالب/ فايز احمد ابو سفيان، رقم تسجيل 11952778، تخصص ماجستير ادارة الصحة العامة في كلية الدراسات العليا، وهو بصدد اعداد الأطروحة الخاصة به والتي عنوانها:

Title of Research: Factors influencing adaptation of health information system among health care providers in Palestine

يرجى من حضرتكم تسهيل مهمته في توزيع اداة الدراسة وهي (استبانة) في المشافي لفئة الموظفين العاملين في مجمع فلسطين الطبي في رام الله لدراسة العوامل المؤثرة في التكيف مع نظام المعلومات الصحية بين مقدمي الرعاية الصحية في فلسطين (مجمع فلسطين الطبي)، مؤكداً لكم بأن كافة المعلومات التي سوف يتم جمعها هي لأغراض البحث العلمي فقط وسوف يتم الحفاظ على السرية التامة وعدم استخدام هذه المعلومات لأغراض أخرى. وسيتم تزويدكم بنتائج البحث لاحقاً بعد انجازه.

شاكرين لكم حسن تعاونكم.

مع وافر الاحترام ،،،

أ.د. وليد صويلح
عميد كلية الدراسات العليا

فلسطين، نابلس، ص ب 7-707 هاتف: /2345115، 2345114، 2345113 (09) (972) * فاكس: (09) (972) 2342907
Nablus, P. O. Box (7) *Tel. 972 9 2345113, 2345114, 2345115
* Facsimile 972 92342907 *www.najah.edu - email fgs@najah.edu

Appendix G

Tables

Table 3.12

Binary logistic regression between sociodemographic data of the participants and their likelihood of influencing human factors affecting HIS acceptance

Predictors (ref. category)	Categories of relationship	Regression with human factors			
		B	OR	Sig.	95% CI
Experience (1-5 Ys)	6 - 10 years	-0.091	0.913	0.727	0.549 – 1.519
	11 - 15 years	-0.079	0.924	0.810	0.484 – 1.763
	16 years or more	-1.150	0.317	0.179	0.059 – 1.693

Table 3.13

Difference in mean scores of technological factors affecting HIS acceptance according to participants' demographic factors

Demographic factor	Values	Mean score	p-value
Gender	Male	3.993	0.289
	Female	4.021	
Age category	20 - 29 years old	3.992	0.423
	30 - 39 years old	4.030	
	40 - 49 years old	3.986	
	50 years and older	3.906	
Educational level	Diploma degree	4.045	0.612
	Bachelor's degree	4.003	
	Master's degree	3.985	
	Nurse	4.016	
Job title	Midwife	4.021	0.733
	Doctor	3.977	
	Pharmacist	3.917	
	Laboratory technician	4.000	
	Manager	3.980	
	Physiotherapist	4.042	
Experience years in Palestine Medical Complex (PMC)	Radiology technician	4.066	0.764
	1 - 5 years	4.013	
	6 - 10 years	4.000	
	11 - 15 years	3.986	
	16 years or more	4.071	

Table 3.14

Difference in mean scores of organizational factors affecting HIS acceptance according to participants' demographic factors

Demographic factor	Values	Mean score	p-value
Gender	Male	2.832	0.068
	Female	2.897	
Age category	20 - 29 years old	2.796	< 0.001
	30 - 39 years old	2.955	
	40 - 49 years old	2.817	
	50 years and older	2.969	
Educational level	Diploma degree	2.970	0.076
	Bachelor's degree	2.842	
	Master's degree	2.920	
	Nurse	2.873	
Job title	Midwife	2.865	0.477
	Doctor	2.835	
	Pharmacist	2.889	
	Laboratory technician	2.948	
	Manager	2.750	
	Physiotherapist	2.708	
Experience years in Palestine Medical Complex (PMC)	Radiology technician	2.926	0.244
	1 - 5 years	2.827	
	6 - 10 years	2.901	
	11 - 15 years	2.861	
	16 years or more	2.768	

Table 3.15

Binary logistic regression between sociodemographic data of the participants and their likelihood of influencing organizational factors affecting HIS acceptance

Predictors (ref. category)	Categories of relationship	Regression with organizational factors			
		B	OR	Sig.	95% CI
Age category (20-29 YO)	30 – 39 YO	0.948	2.581	< 0.001	1.546 – 4.309
	40 – 49 YO	0.398	1.489	0.352	0.644 – 3.443
	50 YO and older	-	-	-	-

Table 3.16

Difference in mean scores of acceptance factors affecting HIS acceptance according to participants' demographic factors

Demographic factor	Values	Mean score	p-value
Gender	Male	4.22	0.789
	Female	4.21	
Age category	20 - 29 years old	4.35	< 0.001
	30 - 39 years old	4.16	
	40 - 49 years old	3.82	
	50 years and older	3.19	
Educational level	Diploma degree	4.15	0.544
	Bachelor's degree	4.22	
	Master's degree	4.27	
	Nurse	4.23	
Job title	Midwife	4.23	0.596
	Doctor	4.20	
	Pharmacist	4.39	
	Laboratory technician	4.13	
	Manager	4.21	
	Physiotherapist	3.96	
	Radiology technician	4.26	
Experience years in Palestine Medical Complex (PMC)	1 - 5 years	4.36	< 0.001
	6 - 10 years	4.20	
	11 - 15 years	3.96	
	16 years or more	3.96	

Table 3.17

Binary logistic regression between sociodemographic data of the participants and their likelihood of influencing acceptance factors affecting HIS acceptance

Predictors (ref. category)	Categories of relationship	Regression with organizational factors			
		B	OR	Sig.	95% CI
Age category (20-29 YO)	30 – 39 YO	- 0.720	0.487	0.006	0.291 – 0.813
	40 – 49 YO	-2.427	0.088	< 0.001	0.031 – 0.249
	50 YO and older	-22.195	0.000	0.999	0.000
Experience (1-5 Ys)	6 – 10 years	- 0.790	0.454	0.005	0.261 – 0.788
	11 – 15 years	- 1.873	0.154	< 0.001	0.076 – 0.311
	16 years and more	- 1.439	0.237	0.069	0.050 – 1.118

Table 3.18

Difference in mean scores of overall factors affecting HIS acceptance according to participants' demographic factors

Demographic factor	Values	Mean score	p-value
Gender	Male	3.75	0.195
	Female	3.73	
Age category	20 - 29 years old	3.76	0.001
	30 - 39 years old	3.74	
	40 - 49 years old	3.67	
	50 years and older	3.60	
Educational level	Diploma degree	3.77	0.553
	Bachelor's degree	3.74	
	Master's degree	3.73	

Table 3.19

Binary logistic regression between sociodemographic data of the participants and their likelihood of influencing overall factors affecting HIS acceptance

Predictors (ref. category)	Categories of relationship	Regression with organizational factors			
		B	OR	Sig.	95% CI
Age category (20-29 YO)	30 – 39 YO	0.493	1.638	0.176	0.802 – 3.346
	40 – 49 YO	0.884	2.421	0.213	0.602 – 9.739
	50 YO and older	0.671	1.956	0.607	0.152 – 25.207
	6 – 10 years	- 0.958	0.384	0.006	0.193 – 0.764
Experience (1-5 Ys)	11 – 15 years	- 2.380	0.093	< 0.001	0.029 – 0.291
	16 years and more	- 3.353	0.035	0.007	0.003 – 0.0396

Table 3.20

Correlation between all scales and subscales of HIS acceptance

Scale part	Mean \pm SD	1	2	3	4	5	6	7	8	9	10	11	12
1-Usefulness	4.511 \pm 0.295		0.258***	-0.014	-0.107	0.069	0.094	-0.054	0.033	-0.110	-0.144*	0.171**	0.346***
2-Ease of use	4.511 \pm 0.295	0.258***		0.141*	0.108	0.100	0.047	0.036	0.068	0.073	0.005	0.073	0.468***
3-Compatibility	4.450 \pm 0.553	-0.014	0.141*		0.039	0.081	0.067	0.022	-0.017	0.116*	0.017	-0.001	0.292***
4-Info. Security	2,645 \pm 0,731	-0.107	0.108	0.039		-0.013	0.029	0.123*	-0.013	0.179	0.069	0.022	0.363***
5-Self-efficacy	3,799 \pm 0.660	0.069	0.100	0.081	-0.013		-0.063	0.032	0.117*	0.036	0.097	0.046	0.341***
6-Social influence	4.52 \pm 0.775	0.094	0.047	0.067	0.029	-0.063		-0.047	0.002	-0.036	-0.074	0.110	0.294***
7-Info. Quality	4.475 \pm 0.600	-0.054	0.036	0.022	0.123*	0.032	-0.047		0.143*	0.224**	-0.014	0.070	0.354***
8-System quality	3.53 \pm 0.596	0.033	0.068	-0.017	-0.013	0.117*	0.002	.0143*		-0.026	0.072	0.021	0.320***

9-Mang. Support	3.257 ± 0.658 2.432	-0.110	0.073	0.116*	0.179	0.036	-0.036	0.224*	-0.026		0.097	-0.069	0.373***
10-Participation	0.7995 ± 2.218	-0.144*	0.005	0.017	0.069	0.097	-0.074	-0.014	0.072	0.097		0.025	0.360***
11-Acceptance	0.387 ± 3.744	0.171**	0.073	-0.001	0.022	0.046	0.110	0.070	0.021	-0.069	0.025		0.410***
12-Overall	0.132 ±	0.346***	0.468***	0.292*	0.363*	0.341**	0.294*	0.354*	0.320**	0.373*	0.360***	0.410**	

(* = p-value < 0.05, ** = p-value < 0.01, *** = p-value < 0.001).



جامعة النجاح الوطنية
كلية الدراسات العليا

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الرعاية الصحية في مجمع فلسطين الطبي - رام الله - فلسطين

إعداد

فايز احمد يوسف ابو سفيان

إشراف

د. وفاء ميناوي

د. راية صوالحة

قدمت هذه الرسالة استكمالاً لمتطلبات الحصول على درجة الماجستير إدارة الصحة العامة، من كلية الدراسات
العليا، في جامعة النجاح الوطنية، نابلس - فلسطين.

2024

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الملخص

تعتمد غالبية المستشفيات الحكومية الفلسطينية على نظام معلومات صحية موحد للتعامل مع متلقي الرعاية الصحية، هذا النظام الذي ينعكس ايجابا على جودة الخدمات الطبية. للتأكد على استمرارية تقديم افضل عناية طبية ممكن، من الضروري دراسة العوامل المؤثرة على قبول نظام المعلومات الصحية بين مقدمي الرعاية الصحية بصفتهم المستخدم الاساسي لهذا النظام ولما لهم من تأثير مباشر على نجاح هذا النظام وضمان تطوره .

التحقق من العوامل المؤثرة على قبول نظام المعلومات الصحية بين مقدمي الرعاية الصحية.

تم استخدام دراسة مقعية نوعية مناسبة لبيئة الدراسة داخل مجمع فلسطين الطبي, تم جمع البيانات باستخدام استابنة معدلة تم تعبئتها من قبل مقدمي الرعاية الصحية داخل مجمع فلسطين الطبي خلال الفترة بين شهرين ايلول وتشرين اول، تم تحليل البيانات باستخدام برنامج التحليل الاحصائي .

العوامل التكنولوجية هي عوامل رئيسية أثرت في قبولهم لنظام المعلومات الصحية والتي شملت جودة النظام، حيث رأى 62.3% من المشاركين أن نظام المعلومات الصحية يوفر كافة الوظائف المتضمنة في إنجاز المهمة مرتفع جداً.

العوامل التكنولوجية والبشرية هي العوامل الرئيسية التي تؤثر على قبول نظام المعلومات الصحية بين مقدمي الرعاية الصحية في فلسطين.

الكلمات المفتاحية: نظام المعلومات الصحية، نظام المعلومات الإلكتروني، فلسطين.